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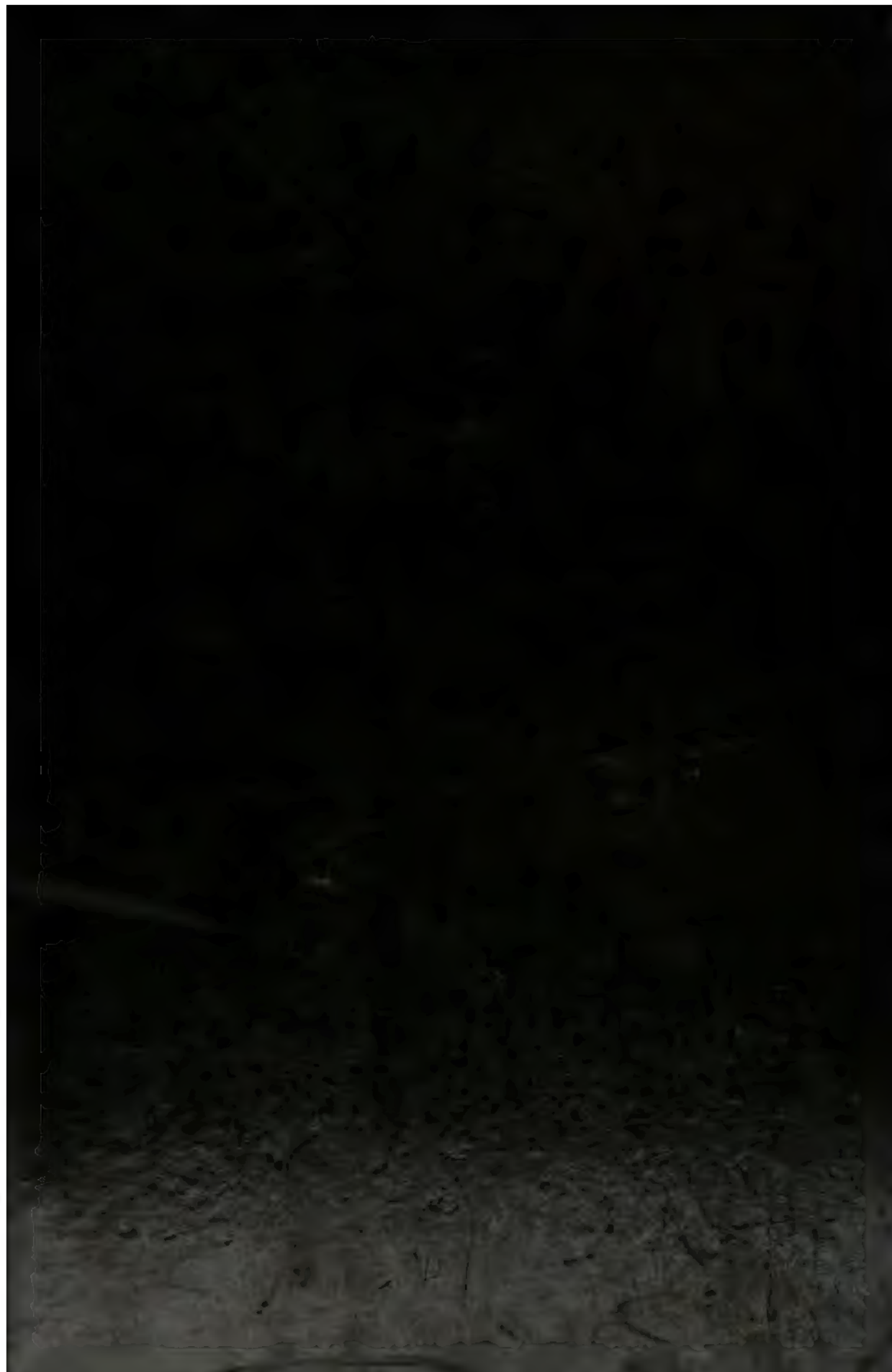
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THE
THERAPEUTIC GAZETTE

A MONTHLY JOURNAL

OF

PHYSIOLOGICAL AND CLINICAL THERAPEUTICS.

EDITED BY

HORATIO C. WOOD

AND

ROBERT MEADE SMITH.

WHOLE SERIES, VOL. XI. THIRD SERIES, VOL. III.

GEORGE S. DAVIS,
DETROIT, MICH., AND PHILADELPHIA, PA.

1887.

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— THE — Therapeutic Gazette.

Whole Series,
Vol. XI.

Detroit, January 15, 1887.

Third Series,
Vol. III. No. 1.

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Original Communications.

GENERAL CONSIDERATIONS ON THE DIETETIC TREATMENT OF DISEASES OF THE STOMACH AND INTESTINE.*

BY PROFESSOR DUJARDIN-BEAUMETZ, Paris, France.

GENTLEMEN:—I am well aware that I am about to take up one of the most difficult topics connected with hygienic therapeutics, but such is its importance that you will permit me to dwell at some length on

this subject of diet in diseases of the stomach. It may be affirmed that the majority of gastric affections are tributary to an exclusive treatment based on hygiene, and that in the therapy of these diseases pharmaceutical agents play only a secondary rôle.

To give method to what I have to say, I shall proceed after the following order: I shall begin by establishing the bases on which you may institute the dietetic regimen of diseases of the stomach, and this will be the theme of the present lecture. Then, in another lecture, I shall apply these general considerations to each of the stomach disorders in particular.

Two modes of procedure are at the disposal of the practitioner to guide him in the study of affections of the stomach,—the clin-

* Two lectures on Alimentary Therapeutics, delivered in the Cochin Hospital. Printed from advance sheets.

ical methods, properly so called, and the more strictly scientific methods, which are addressed at once to the stomach. The clinical methods were the only ones which we possessed till Kussmaul's discovery enabled us to study directly the gastric functions. They consist in the palpation and percussioh of the stomachal region, in an attentive interrogation of the patient, and in an examination of the vomitus and dejecta. We thus used to obtain the only signs that could guide us in the diagnosis of gastric affections.

These signs, from the particular point of view of the functional working of the stomach, were, it must be admitted, of doubtful exactness. The patient can give you but very uncertain information concerning the precise duration of the stomachal digestion, and the repugnance which he often experiences for certain articles of food is especially a matter of habit and custom, or, it may be, of a particular idiosyncrasy. I once knew a patient who could not eat *veal kidney* without veritable symptoms of poisoning; others experience similar effects from eggs, and the list of cases of the kind might be considerably augmented.

Recall to your mind in this connection the modifications which pregnancy effects in the digestibility of certain alimentary substances, also the still stranger tolerance or intolerance which some nervous and hysterical persons manifest for certain articles of food, and you will agree with me that if the ordinary clinical processes are of use in the study of the way the stomach performs its functions, they lack precision.

Hence it is that we gladly welcome the more scientific methods which come to us from Germany, and of which Leube has been the most ardent and able expounder,—methods which consist in directly examining the

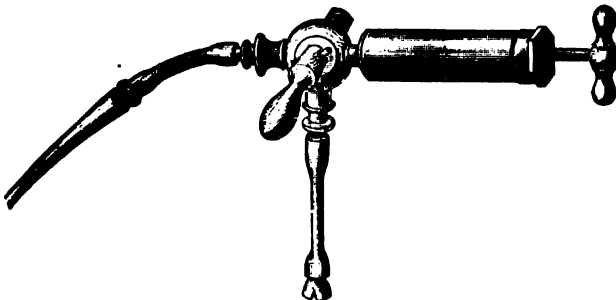
mucous membrane of the stomach and its contents. All these processes are based on the employment of the stomach sound and explorers, and comprehend two distinct acts,—examination of the duration of digestion and examination of the gastric juice.

Let us commence with means used to ascertain the duration of the digestion. According to Leube, a healthy stomach ought in seven hours to have digested a plate of soup, a large slice of beefsteak, and a small wheaten loaf. The liquid of a lavage of the stomach, made after that lapse of time, ought to be absolutely clear, if the stomach is doing its work well. Kretschy makes a single reservation to the rule laid down by Leube,—during menstruation in the female the duration of the digestion may exceed seven hours.

But the examination of the gastric juice requires multiple and somewhat difficult processes, and we have here to study, on the one hand, the acidity of the gastric juice, and, on the other, its digestive power. Before entering on the consideration of these two questions, I must briefly point out the methods in use for obtaining gastric juice, and here again we shall have to study the two following points: how to extract gastric juice from the stomach, and how to make the mucous membrane of the stomach secrete this juice.

To obtain gastric juice from the stomach we have two methods,—that of the sound and the sponge method. If you wish to use the sound, the ordinary siphon-tube will answer the purpose, or, better still, the stomach-pump. I here place before you the one which I ordinarily use. This instrument, constructed by Collin, is very simple and very ingenious, and it suffices to turn the swivel which fixes the syringe to make it communicate either with the stomach or with an outward receptacle (Fig. 1).

FIG. 1.



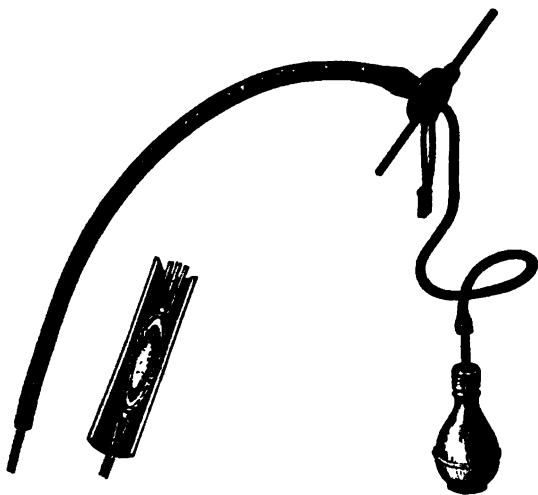
Leube employs a soft rubber sound, six millimetres in diameter, the parietes of which are two millimetres thick, which is introduced

into the gastric cavity, and by means of the stomach-pump, with which it is connected, the contents of the stomach are extracted.

Ewald makes use of a very handy method. He passes down into the stomach a soft rubber catheter scarcely larger than a good-sized urethral sound, and seventy centimetres long. This is introduced nearly the whole length, when he causes the patient to make an effort at vomiting, and at the moment that the liquid appears at the upper extremity of the sound, he seizes the latter with his fingers and quickly withdraws it from the stomach. He then blows into a wineglass the liquid which the catheter contains.

I have myself constructed a stomach-explorer, made for me by Galante, and which I here place before you (Fig. 2). It compre-

FIG. 2.



hends, as you see, a stomach-sound precisely similar to the tube of Debove, having a length of half a metre. In the interior of this tube is a little glass bulb, perforated at both ends, to whose lower extremity is attached a little rubber tube to put the bulb in communication with the mucous membrane of the stomach. The narrow upper extremity of the glass bulb is adapted to another rubber tube, which is much longer, and ends in a flask-shaped rubber ball similar to that which makes a part of an ordinary spray-producer. Finally, a stout string enables us easily to withdraw the glass reservoir. The mechanism of this apparatus is easily understood. You introduce the tube into the interior of the stomach, then, by means of the rubber ball, you exhaust the air in the glass bulb, which then admits gastric juice; then you withdraw the sound. When once the tube is out of the stomach, you remove the glass bulb by means of the string, and empty the gastric juice which you have extracted into a watch-glass by means of pressure made on the rubber ball. The ap-

paratus is one of the most simple, and its introduction and removal are exceedingly easy, especially in individuals who are used to the stomach-tube.

In connection with the foregoing methods, consisting in stomach catheterization, the sponge method deserves mention, being a process which is very simple, and very much employed in Germany, and which we owe to Edinger. Little bits of sponges enveloped in gelatin are attached to the extremity of a long thread. The patient swallows the sponge while fasting. It is allowed to remain half an hour in the stomach, then is withdrawn by means of the thread, and the contents squeezed into a watch-glass for testing.

If you have not the prepared sponges, such as are made in Germany, you can very easily replace them by the following means. You take one of those gelatin-capsules, divided into two parts, encased the one in the other, and known under the name of *Lehuby capsules*. You place in the interior of the capsule a little sponge, to which is firmly attached a long silk thread, which is made to pass through the second part of the capsule, and the two hemispheres of the capsule are then firmly joined together, and are ready for use. The gelatin-capsule is soon dissolved in the stomach, and becomes impregnated with the gastric juice.

The sponge process is more painful than that of the sound. The object of resorting to this method is to do away with the necessity of the introduction of a tube into the interior of the stomach, but the deglutition of a sponge held by a thread, and which has to remain half an hour in the stomach, produces more nausea and vomiting than the sojourn of a sound. I have tried these sponges on a good many patients and on myself, and I have reason to abandon the method.

Now that you know the means employed to obtain gastric juice, I will tell you what you must do in order to provoke the secretion of this fluid. You know very well that the stomach, at the moment of your exploration, ought to be entirely empty, as the presence of food in that cavity considerably modifies the reactions of the gastric juice. You must, then, operate when your patient is fasting, and to stimulate the flow of gastric juice, you may employ three processes,—mechanical, chemical, and thermic.

The mechanical processes consist in irritating the gastric mucosa by a foreign body, as the point of a sound or a sponge. The chemical processes consist in the employment

of a solution of bicarbonate of sodium. You begin by washing out the stomach; then you introduce fifty cubic centimetres of a three per cent. solution of bicarbonate of sodium. At the end of a quarter of an hour you add a half-pint of warm water; then you siphon off (or remove by the pump) the contents of the stomach, to which you may apply the proper tests.

These two processes—mechanical and chemical—ought to be abandoned. The first, because it is uncertain; the second, because the bicarbonate of sodium modifies the reactions which you are seeking to elicit from the gastric contents. The thermic processes are now alone employed, and this is the *modus operandi*:

You introduce into the stomach by the siphon one hundred cubic centimetres of ice-water; then you wait ten minutes, and add three hundred cubic centimetres of water at the ordinary temperature. You siphon off the whole, and examine the liquid thus obtained. It is this "thermic" process which I am about to exemplify in the patient now before you. You have seen with what facility we have been able to accomplish our object, owing to the handy arrangement of the stomach-pump, which, by the rotation of the handle which fixes it, enables us to inject liquid into or withdraw it from the stomach.

We have, then, according to the formal directions of Leube, introduced one hundred cubic centimetres of ice-water into the stomach. We have waited ten minutes, then withdrawn the liquid, which I now place before you, and this it is which we shall now examine. We apply to this liquid two orders of tests,—the one intended to determine its digestive power, the other to ascertain the presence or absence of hydrochloric acid in the gastric juice.

I shall pass briefly over the first order of tests, which belong to the province of chemical researches, and consist in practising artificial digestion with the fluid extracted from the stomach. You take a certain quantity of this liquid; you add a little hydrochloric acid; then you introduce some coagulated albumen in the form of little cubes, whose weight you know. You put the whole in an oven heated to 40° C., and at the end of a certain time you estimate the quantity of albumen transformed into peptone; in a word, you perform an artificial digestion with this gastric fluid. This method, advised by Leube, can only be applied in exceptional cases, and is not to be commended as a practical method.

This is not so, however, with the processes put in usage to detect the presence of hydrochloric acid in the gastric juice. It is to Von den Velden that we are indebted for the most valuable contributions pertaining to this subject. After having insisted on the necessity of the presence of hydrochloric acid in the gastric juice to enable the stomachal digestion to go on, this clinical physiologist has laid down the law that when hydrochloric acid is wanting, its absence is due to a cancerous neoplasia in the stomach. There is, then, as you see, from the point of view of the diagnosis and prognosis of affections of the stomach, a considerable importance in determining the presence or absence of hydrochloric acid.

Three reagents have been proposed by Von den Velden,—methyl violet, which, under the influence of hydrochloric acid, passes from violet to blue; tropæoline, which changes from yellow to carmine-red; and fuchsine, which loses its red color altogether. A few words about these various reagents.

Tropæoline is a coloring substance which is obtained from coal-tar, and which owes its name to the fact that the colors which are derived from it resemble those of the nasturtium (*Tropæolum majus*). There are several kinds of tropæoline, which are designated under the names of tropæoline o, oo, ooo. It is the tropæoline oo of which you should make use. In France you can substitute for the German tropæoline a similar substance, to which is given the name *Poirier's orange*, from the name of the Poirier manufactory where are prepared the dye-stuffs derived from aniline; and as there are many shades of Poirier orange, it is the *orange No. 4* which corresponds to the tropæoline oo. You will make with the tropæoline oo, or the Poirier orange No. 4, a one per cent. solution.

As for fuchsine, a test solution is made of 2 or 3 centigrammes per 1000; but this reagent ought not to be employed for the three following reasons: first, because it is not a very sensitive test; second, because the decoloration is slow in being produced; lastly, because it is always difficult for the eye to decide if the decoloration is more or less complete. There remain, then, the two processes which are less open to objection,—that of methyl violet and of tropæoline.

In using the methyl violet test, you take two test-tubes. You place in these two tubes fifty cubic centimetres of distilled water, in which you deposit two drops of a two per cent. solution of methyl violet. Then you let

fall, drop by drop, in one of the tubes the liquid resulting from the lavage of the stomach, while in the other tube you drop an equal quantity of pure water.

I here show you this test, and you see how delicate it is, and while one of the tubes remains violet, the liquid in the other has turned quite blue. This test enables us to detect as small a proportion of hydrochloric acid as 1.5 per 1000.

The tropæoline test is even more delicate, and it presents the great advantage that lactic acid gives a much more gradual change of color. This is the mode of proceeding :

You take two watch-glasses of equal capacity, which you place on white paper, or on a square of white porcelain. Into one of these watch-glasses you insert by means of a pipette a given quantity of the liquid from the stomach, previously filtered. Into the other you introduce an equal quantity of water ; then you let fall by means of a dropper into the two watch-glasses an equal number of drops of the solutions of tropæoline oo, or of the Poirier orange No. 4 (the one per cent. solution). It is easy for you to see how bright is the change of color, and while the contents of one of the watch-glasses keep their yellow hue, the other takes on a very marked carmine-red tint. To these tests Uffelman has added still two other processes ; the one is based on the modification which the coloring-matters of wine undergo under the influence of hydrochloric acid. Uffelman practises this test in the following way. He takes one cubic centimetre of young Bordeaux wine, and adds three cubic centimetres of alcohol and glycerin. He thus obtains an almost complete decoloration, and it takes the merest trace of hydrochloric acid to give a red color to the mixture.

The other reagent proposed by Uffelman consists of a two per cent. solution of phenic acid, to which is added one drop of liquor ferri perchloridi. You thus obtain a blue-colored liquid. If to this solution you add a little hydrochloric acid, the color disappears. If you introduce lactic acid, the liquid becomes yellowish ; if butyric, it becomes milky.

Uffelman's tests are less employed than those of Von den Velden, and the latter are certainly the most practical. It now remains to determine the diagnostic value of these tests.

In France these researches have been received with some degree of scorn, and few clinicians have undertaken to repeat these experiments of the German physicians, preferring

still to follow the traditional methods. I think that there is little justification for this scorn, for if the anamnestic signs and symptoms furnished by the patient himself are capable of guiding us in our diagnosis, it is silly to reject methods which may in a certain measure confirm our diagnosis. The absence of free hydrochloric acid in the stomach is an important sign. I am well aware that this acid has been found to be absent in other diseases besides cancer, and Uffelman and Schillhart have proved this to be sometimes the case in dilatation of the stomach and in certain fevers, but the evidence is sufficient almost to warrant us in excluding all idea of cancer of the stomach when hydrochloric acid has been proved to be present in the gastric juice, and the interesting observation of Roose where this acid continued to be present in the gastric secretion till the death of the patient, which happened from cancer of the pylorus, is altogether exceptional.*

I have then entered with alacrity on the path marked out by our *confrères* of Germany. It is a line of investigation which they are pursuing with success, every day perfecting their methods. Thus it is that Ewald has pushed farther than any one else the inquiry at what moment in the digestive process the different acids of the stomach make their appearance. He has been led to admit three digestive periods. In the first, which lasts from ten to thirty minutes, lactic acid is found in the stomach. In the second, both hydrochloric and lactic acids are found. In the third, there is free hydrochloric acid, and this is noted one hour after the ingestion of food. Hence, Ewald advises that in the diagnosis of stomach affections one should always take due account of the four following circumstances : 1. Of the energy of the acid reaction ; 2. Of the presence or absence of free acid ; 3. Of the nature of this acid ; 4. Of its digestive power on albuminoid substances and carbohydrates.

Before finishing these general considerations, I must say a few words concerning the general line of treatment employed in Germany, and in particular by Leube, in stomach affections.

Leube's therapeutic system is based on the employment of lavage of the stomach, and on this physiological axiom, that at the end of

* Roose, "Cancer of the Pylorus, with Persistence of Hydrochloric Acid in the Gastric Juice till the Death of the Patient" (*Revue Méd. de Louvain*, January, 1886, p. 20).

seven hours the stomach ought to be entirely rid of the food of the previous meal.

Leube has also established four modes of dieting, or, as we would say, dietary regimens, to which I shall briefly allude, borrowing from the excellent thesis of my pupil, Deschamps, on "Gastric Therapeutics in Germany."*

The first regimen consists of broth of meat-juice, of milk, and of eggs, soft-boiled and raw. These, according to Leube, are the most digestible of all foods. I call your attention to the order in which I have enumerated them. This order is, according to Leube, that of their digestibility.

As for drinks, nothing should be taken but pure water, or water slightly charged with carbonic acid; this regimen is suitable for beginning the treatment of chronic catarrh of the stomach.

In the second regimen we find (and here, too, in the order of their digestibility) boiled calves' brains and boiled thymus, boiled chicken, boiled pigeon, and you may add milk porridge, made with tapioca and whipped eggs, and calves' feet.

In the third regimen you will supplement these foods by very rare beefsteak and raw bacon. Leube dwells particularly on the mode of preparation of beefsteak. He directs to take a slice from the rump; this must be well pounded and then scraped with a spoon till the pulp is all scraped out; cook the pulp rapidly with fresh butter.

The fourth regimen comprehends a great number of alimentary substances, such as roast pigeon, venison, partridge, rare-done roast beef (to be eaten preferably cold), roast veal, and macaroni. Here for the first time wine is permitted, but in very small quantity. Vegetables in moderation, a very little salad, and still less of those stewed fruits which the Germans are always in the habit of serving with roast beef.

Such are the dietetic rules followed in Germany for the cure of affections of the stomach.

Now that you know on what basis are founded the dietetics of diseases of the stomach, we may study the regimen proper of each of these affections. This is what I shall now do.

We have already seen on what scientific basis we may establish the dietetics of the stomach. We will now apply these general considerations to the affections of the stomach in particular, beginning with cancer.

Cancer of the stomach has not, properly

speaking, any special alimentary hygiene, and according to the seat, the variety of the morbid growth, the more or less rapid march of the affection, the symptoms and treatment are variable. But what you ought specially to keep in mind is that it is quite possible in the case of cancers of the stomach of wide extent to preserve the almost complete integrity of the digestive functions, and in a recent communication to the Society of the Hospitals, I have reported several cases which have passed under your own observation.†

You remember that man who lately occupied No. 17 ward, Beau; he was profoundly cachectic, and had in the region of the stomach a tumor of whose nature we were not much in doubt. This patient received, at his own solicitation, every day a salad of hard-boiled eggs, and for a month he made of this indigestible food his only sustenance; he died, and the autopsy fully confirmed our diagnosis, disclosing the existence of a spreading cancer, which had involved almost the whole of the stomach.

You also remember the female patient who entered our service for incessant vomiting and severe pain in the region of the stomach. Thanks to lavage, the functions of that viscus were restored to such a degree that the patient was able for a year to resume her ordinary diet. She entered anew our service, and suddenly succumbed. At the autopsy we found a perforation of the stomach in the centre of a cancerous degeneration. The annals of medicine abound in facts of this kind, and it may be affirmed that almost complete integrity (at least in appearance) of the functions of the stomach may coexist with the most advanced stages of the evolution of carcinomatous affections of this organ.

Here, then, you should allow yourself to be guided by the desires of your patient, while insisting at the same time that he shall take his food in a thoroughly boiled or pulpified state, and make choice of vegetable and starchy foods rather than such as are azotized and fatty. We base the exclusion of these latter aliments on the fact that the gastric juice, as I have already told you, in cases of cancer of the stomach, in losing its hydrochloric acid, loses its digestive properties on albuminoid matters.

• If the rules of dietetics are uncertain in cancer, it is not so in the treatment of ulcer

† Dujardin-Beaumetz, "On the Prognosis of Cancer of the Stomach." (*Bull. et Mem. de la Soc. des Hôpitaux*, 3d series, p. 129)

of the stomach; and Cruveilhier has won for himself lasting renown by having been the first to describe the malady and to find the remedy. This remedy, as you know, is milk diet, carried out in all its rigorousness; on this the life of the patient depends, for if he deviates from this regimen mortal hemorrhages may ensue.

Debove, to neutralize the digestive action of the gastric juice on the mucous membrane proper of the stomach, and to prevent all digestive operations in that cavity, recommends to give from 30 to 40 grammes a day of bicarbonate of sodium to the patient. I believe that such doses are not without harmful effects, and approve of the practice of Lucca, of Naples, who gives his patients milk made alkaline by lime-water.

It is only gradually, remember, that you should return to the ordinary diet, beginning with the starchy articles of food and going on to meat under its most digestible form,—that of meat-powder.

Milk, and an exclusive milk diet, is also the most active curative means in chronic catarrh of the stomach,—a disease which is almost always developed under the influence of alcoholic excesses. In this gastritis of the drunkard you observe two stages: in the first, there is at the outset exaggeration of the acid secretions of the stomach, producing pyrosis and cardialgia; in the second, there is cessation of the secretion of the gastric juice and production of mucus; this is the period of *pituitous catarrh*. In both periods you should employ no other dietetic regimen but milk, taking care always to add to the milk some alkaline water or bicarbonate of sodium.

As the sudden abandonment of all alcoholic stimulants often induces in these patients trembling and grave nervous disorders, you may in the first periods of chronic gastritis employ with advantage those fermented milks—kefir or galazyme—of which I have spoken while on the subject of complete aliments; then you may gradually return to the ordinary diet, taking for your basis the different regimens which Leube has established for the cure of stomach affections.

But for many years, if not for a whole lifetime, the patient ought to abstain from every kind of alcoholic beverage, and drink nothing with meals but milk. This is a requirement very difficult of execution in the case of our laboring classes; hence you will continually see these patients, after having got well at the hospital, come back again for

treatment by reason of having resumed their habits of intemperance. Never was anything more true than the common saying about the drunkard's oath (made only to be broken). I come now to the alimentary hygiene of gastrectasia.

Dilatation of the stomach, since Bouchard's notable researches thereon, has played a preponderant rôle in the pathology of gastric diseases. It deserves, then, to arrest our attention for a few minutes while we consider the dietetic treatment of this malady.

Struck by the fact that substances introduced into the stomach sojourn there an abnormally long time, and give rise by such sojourn to a characteristic swashing sound (*bruit de clapotement*), it has been deemed most rational to employ a dry diet in this affection, and to this system of cure has been applied the name of *xerophagia*. Vaunted anciently by Hippocrates, by Petronius, by Asclepiades, by Ettmüller, and more recently by Chomel, as the most efficacious treatment for what the latter improperly called *the dyspepsia of liquids*, this dry diet regimen has found an earnest advocate in our friend and colleague, Huchard. He recommends that the patient shall drink only a small tumblerful (8 to 12 ounces) at each meal, and none between meals; that he shall discard all foods that contain much water, and take no soups unless they are made very thick. He forbids fruits, and advises roast meats, eggs, and vegetables.

But it is to Bouchard that we are indebted for the most precise rules as to the dietetics of dilatation of the stomach. You will find in the remarkable thesis of my excellent interne, Dr. Paul Le Gendre, complete details as to Bouchard's regimen, and taking that as our standard authority, we will examine successively the drinks and foods of patients in gastrectasia.

As for drinks, Bouchard allows only 375 grammes (or about 12 fluidounces) with the breakfast and dinner, and none between meals. All beverages should be avoided which have a tendency to ferment; red wines should be interdicted, and the patient allowed only the table mineral waters, or water containing one-third or one-fourth part of beer or white wine, or a teaspoonful of brandy. It must be insisted on that the patient shall not drink between meals.

As for foods, all fatty substances must be abandoned; the patient must be allowed only bread crust or toast, the interval between repasts must be as long as possible, and there should be at least nine hours between the two

meals, breakfast and dinner, and fifteen hours between dinner and breakfast.

In my own practice I pursue a somewhat different course, and these are the rules which I apply to the treatment of gastrectasia. I divide the victims of this affection into two great classes, those who have diarrhœa and those who are constipated.

For the first I order a purely vegetable diet,—starchy foods, vegetables, and fruits. The amylaceous substances ought to be ingested in a thoroughly cooked condition; the vegetables should be very tender and well done, and the fruits stewed. I absolutely suppress meat and eggs. For a drink, I order Bavarian or Pilsen beer, or liquid malt. I insist upon a long interval between meals, and limit the drinks to ten fluidounces at each meal.

I add to this purely vegetable regimen the employment of carbon-bisulphide water as an antiseptic. This solution, of which I have already spoken in my "New Medications," renders me great service. The formula is as follows:

R Pure sulphide of carbon, f3vi;
Essence of peppermint, gtt. 1;
Water, f3xiii.

Mix in a flask having the capacity of five hundred cubic centimetres, shake, and let settle. Use the clear supernatant solution, and renew the water as fast as you pour off from the flask for medicinal use.

I give daily from four to eight tablespoonfuls of this solution at meal-time and between meals. Each dose is taken with half a glass of milk or beer.

In the case of patients with dilated stomachs, who are constipated, I adopt the treatment of Bouchard,—that is to say, I permit roast meats. I order toasted bread and fruits, and especially peaches and grapes. I add light saline purgatives, such as, in particular, the natural mineral waters.

In both classes of patients hydrotherapy renders us great service. As for lavage of the stomach, it is indicated whenever the dilatation is considerable.

In rigorously submitting your patients to this system of diet, you will considerably ameliorate the state of their stomachs, and you will relieve most of the symptoms due to the gastrectasis, without, however, much modifying the distention of the gastric ventricle.

The alimentary regimen of dyspeptics is very difficult to establish. This word dyspepsia is destined gradually to disappear from nosology, and be replaced by the name of the disease of which the dyspepsia is the symp-

tom; but for the present the term may be accepted for what is generally understood by it.

From the exclusive point of view of dietetics, I divide dyspepsias into three groups,—dyspepsia by excess of gastric juice secretion, dyspepsia by deficiency of secretion, and dyspepsia with sympathetic troubles.

For the first, you will order a purely vegetable diet, composed of bread, vegetables, and fruits. For drink, you will order milk, and you will sometimes allow beer, but never wine.

For dyspeptics with deficiency of secretion of gastric juice, meat and soups are, in my opinion, the best peptogenous agents. You will then order meat, but in a very assimilable form,—that is to say, in the form of powder or pulp. It is here that the meat-choppers and pulpifiers will render you great service. But it is necessary to be very careful about the quantity of meat which you order, and proportion it exactly to the digestive power of the patient whom you are treating. You may prescribe milk, which, by its lactic acid, augments the digestive power of the stomach. You can make use also of the mixture, vaunted by Herzen, of broth and milk. As wine and alcohol augment the acidity of the gastric juice, you will authorize wine, or water to which a little brandy is added. In this dyspepsia by deficiency of gastric juice, the peptones may render you some service when the patient can tolerate them.

For dyspeptics with sympathetic troubles, such as gastric vertigo, you should diminish all the excitations which result from the irritation of the mucous membrane of the stomach, and you will be most likely to do this by making your patient a vegetarian,—*i.e.*, by subjecting him to a regimen of bread, fruits, legumes, and vegetables, and giving him milk for a drink.

As you see, gentlemen, I attribute a considerable importance to a strictly vegetable diet in a great number of diseases of the stomach. Allow me, then, to state the principal points in this dietetic treatment.

In regard to bread, I order the crust rather than the crumb, or, better still, when the patient has good teeth, bread well toasted.

As for amylaceous foods, I recommend mashed potatoes, pea-soup, and bean porridge, Indian-meal puddings, and hominy, oatmeal porridge, and oatmeal cakes, barley gruel, sago, farina, arrow-root, macaroni, etc., in puddings, adapting the regimen to the condition of the patient, whether fat or lean.

Vegetables must before eaten be boiled to a mash ; salads, legumes, spinach, sorrel, green beans, etc., must be cooked till quite tender.

Fruits should be stewed or baked before being eaten, grapes alone being excepted. In this dietary I allow eggs, on condition that they be soft-boiled or eaten raw. For drinks, beer seems to me preferable to wine in a strictly vegetable regimen.

I shall now finish what I have to say on the subject by briefly alluding to the dietetic treatment of diseases of the intestine. I shall concern myself here only with constipation and diarrhœa, two diseases in which diet has a most happy influence. Let us begin with constipation.

Constipation is often tributary to an appropriate alimentary regimen, and it may in truth be said that to the constipated the diet treatment is worth more than the medicinal.

As a general rule, it will be enough simply to augment the quantity of the fœcal matters if you wish to obtain regular stools, and as the excreta are constituted by the waste products of digestion, and in particular by cellulose which escapes the action of the digestive juices, it is for the most part by giving foods containing cellulose in abundance, such as bran bread, green vegetables, salads, spinach, sorrel, tomatoes, etc., that you can by dietetic means promote alvine evacuations. Recall to mind in this connection the singular remark of Voit, who affirms that by examining the fœcal matters deposited along the roads one may judge of the richness of a country. In places where the peasants eat meat, the fœces are hard ; where, on the contrary, the food is of a purely vegetable kind, they are soft, and resemble cow-dung.

To these herbaceous substances, to these green vegetables, you may add certain articles of diet which, in constipation, possess curative properties. Thus, gingerbread eaten in large quantity is very generally laxative ; fruits, and especially grapes, have this quality in a high degree. In the grape-cure, diarrhœa is one of the effects which is reckoned upon with certainty ; melons, oranges, and lemons are used for the same purpose. Baked apples, especially when cooked with molasses, have loosening properties.

But there are two substances which have been especially vaunted in the treatment of constipation,—white mustard-seed and linseed-meal. Didier was the great advocate of white mustard-seed. This laxative agent, which was once very much in vogue, now seems to have gone out of fashion. If it had the advantage

of often determining stools by its presence, it also, in more than one instance, was the cause of intestinal occlusion by the accumulation of these seeds in the intestine.

Flaxseed-meal is a good means for overcoming constipation when taken in the way which I prescribe. You macerate a tablespoonful of the ground seeds in a gill of water, steep an hour, and swallow the whole at meal-time. By all these little means you may succeed in maintaining regularity of the stools, though some obstinate cases resist them altogether. I come now to the dietetic treatment of diarrhœa.

From a dietetic point of view, we should distinguish abdominal fluxes determined by affections of the small intestine from those due to affections of the large intestine. It is especially with reference to the first that diet renders us important service. It will hardly be disputed that in chronic diarrhœas an appropriate dietary regimen is the *sine qua non*. This regimen is altogether based on the employment of the four following alimentary substances : milk, raw meat, peptones, and meat-powders.

Milk occupies the first place in the dietetics of abdominal fluxes, and it is by the milk diet rigorously carried out that you will obtain the mastery of these affections. I know, in fact, of but one form of chronic diarrhœa that is rebellious to this treatment, as it is in fact to all other treatments. I refer to tuberculous diarrhœa. I have said *rigorously carried out*, for infractions of this exclusive regimen perpetuate the diarrhœa instead of curing it, and we often see in our troops who return from the far East the sad consequences of such infractions of the milk diet.

The patient, finding himself a little better, and tired of milk, abandons this regimen, to go back to it again as soon as the disease increases in intensity ; the diarrhœa is perpetuated, and the patient eventually succumbs. First, then, an exclusive milk diet ; then raw meat and meat-powders. I much prefer the meat-powders to the raw meat, but it is necessary to proceed with extreme caution, and proportion the quantities of these azotized aliments to the state of the intestine.

Bazile Ferris preferred the peptones to raw meat and meat-powder, giving them along with the milk diet. You may at times use these peptones with benefit ; then you may, little by little, increase the daily fare of your patient, being guided by your knowledge of the digestibility of the articles of food which you order.

Just as laxative properties have been ascribed to certain aliments, so, also, others have been regarded as constipating. In this connection I may mention quinces, and substances that contain tannin, such as artichokes. White of egg has also been utilized in these cases. All these means are absolutely secondary, and play a doubtful rôle in the cure of diarrhœa.

In the diarrhœa of infancy milk is still the remedial agent *par excellence* (the milk being suited to the age of the infant), and whenever you see in your little patients frequent greenish discharges, be persuaded that this diarrhœa results either from cold or the use of improper food. You well understand that you may augment the constipating properties of the milk by the addition of lime-water, which is very serviceable in such cases.

I shall finish this course of lectures on alimentary therapeutics by a final lecture on diet in fevers.

CRITICAL OBSERVATIONS AND EXPERIMENTAL STUDIES ON THE INFLUENCE OF PHARMACOLOGICAL AGENTS ON PERIPHERAL VESSELS.*

BY PROF. R. KOBERT.†

PART I.

IN the same way that Schmiedeberg and Bunge‡ studied on the excised kidney the formation of hippuric acid, and W. von Schroeder§ and W. Salomon|| on the excised liver the formation of urea, may we also study the action of pharmacological agents on other organs thus kept artificially in functional activity.

This action may manifest itself in affecting the movements and variations in volume of the respective organ, in increasing or decreasing its secretion if it be a gland, and, finally, in altering the vascular calibre of arteries and veins.

Investigations relating to the *movements* of excised, or at least as well as possible isolated, organs have been instituted for physiological and pharmacological purposes on the iris of cold- and warm-blooded animals; on the uri-

nary bladder and the œsophagus of the frog; on the wing-membrane of the bat; on the external ear of the rabbit; on the heart of reptiles, amphibious animals, and fish; on skeleton-muscles of dogs; and on the intestines, stomach, and uterus of various warm-blooded animals. Critically viewed, however, it is clear that the interpretation of phenomena thus observed cannot be otherwise but arbitrary until the technique of keeping an organ alive—in most cases this consists only in conducting a uniform current of adequate blood through the isolated organ—has been sufficiently studied and perfected. And this cannot, of course, be accomplished in a few isolated trials.

In view of the scanty experimental material in existence, I thought it appropriate to institute a more extensive series of experiments on the action of the most well-known pharmacological agents, for the sole purpose of studying the *alterations in the velocity of the blood-current*. I must remark that sufficiently numerous preceding experiments have demonstrated that my *modus operandi* of blood-transfusion insures the vitality of the respective organs for several hours, and procures a uniform sanguineous current.

The first trials with conduction of blood through surviving organs of warm-blooded animals appear to have been made by Alexander Schmidt,¶ under the direction of Ludwig in Leipzig. He conducted, with an approximately equal pressure, the blood of a dog through a dog's kidney placed in a heat-box, in order to study the generation of carbonic acid. These experiments, however, did not produce any results of pharmacological interest. The subsequent labors of P. Heyer,** and particularly of A. Mosso,†† on the other hand, which were likewise executed at the Leipzig Institute, have attained a high degree of perfection and claim our interest. The pharmacological results of these labors refer to nicotine, atropine, carbonic oxide, hydrate of chloral, and cyanide of potassium. Mosso continued, later on, these experiments in Italy, with various modifications; but these publications have never been seen by me.

* A brief abstract of the results of this work has appeared in the *Tageblatt der Strassburger Naturforscherversammlung* (Strassburg, Trübner, 1885), p. 425.

† Chief of the Pharmacological Laboratory at Dorpat, Russia.

‡ *Virchow's Archiv*, vol. vi., 1877, p. 233.

§ *Ibid.*, vol. xv., 1882, p. 387.

|| *Ibid.*, vol. xcvii., 1884, p. 149.

¶ "The Respiration within the Blood." Second Treatise. Proceedings of the Royal Saxon Society of Sciences of Leipzig; Mathem. Physic. Class, Proceedings of Meeting of November 9, 1867, p. 113.

** *Expériences sur la Circulation du Sang dans les Organes isolés*. Bruxelles, 1873.

†† "Some New Properties of Vascular Walls." Proceedings of the Royal Saxonian Society of Sciences, Leipzig, vol. xxvi., 1874, p. 305.

In 1877, J. Bernstein* advanced the following axiom, which held true also of the pharmacological science: Irritation of the sciatic nerve of a dog's thigh traversed by the blood of a (curarized) dog does not produce vascular contraction any more than during life, but provokes vascular dilatation. As Sadler† and Gaskell,‡ employing the same plan of blood-conduction, did not observe any alterations in the width of the current, Bernstein is inclined to attribute the vascular dilatation observed by him to the vessels of the skin. Later, in 1879, Filehne§ made some interesting experiments with the conduction of blood through a rabbit's ear. These experiments showed the action of nitrite of amyl to be of central origin. In 1880, Salvioli|| demonstrated that by conducting blood through excised sections of the intestines certain phenomena of life could be accurately studied. He mentioned as such the absorption of peptone, the intestinal peristaltic movements, the increase of the ascending blood-current in poisoning with atropine and tincture of opium, and the decrease of the current in nicotine-poisoning. In the same manner, Albertoni¶ investigated later the action of cotoin on the intestines, and found that this agent increases the quantity of blood traversing the bowels. By blood-conduction through the posterior extremities of the dog, N. Rubenow** showed in 1880 that an infusion of adonis vernalis contracts temporarily the blood-vessels independently of the central nervous system.

In 1883, Abelés, experimenting with blood-conduction on excised kidneys, arrived at the conclusion that urea increases the blood-current in this organ. Of high value for the knowledge of results obtained by blood-conduction are also the experiments of M. von Frey†† and M. Gruber, in which the technique has reached the highest degree of perfection. In these painstaking works (which appeared after the conclusion of my pertinent researches) it was also shown that during the

conduction the blood becomes essentially altered and ultimately unfit for use.

These are the most important data which have been recorded in regard to experiments on surviving organs of warm-blooded animals and the influence of pharmacological agents on such organs. The few serviceable experiments instituted with blood-conduction on *cold-blooded animals*, especially on frogs and turtles, will be referred to below. They are, however, of secondary importance, and are only of value when viewed as experiments parallel to those instituted on warm-blooded animals. The following are the two principal objections which must be urged against these experiments: 1. In no instance was there but a single organ traversed by the blood, but invariably the entire body, excepting the heart; hence it was impossible to tell which organ had caused the increase and decrease of the traversing current observed by the experimenter. 2. The medium of conduction used was in nearly every instance a solution of chloride of sodium, which was, besides, often mixed with blood foreign to the animal. Subjected to such a treatment the vascular walls, which in this connection play of course the most essential rôle, rapidly underwent pathological changes or even lost their vital energy. Although the defects of these procedures have been openly exposed by Glax and Klemensiewicz‡‡ in 1882, such researches are nevertheless constantly cited as embodying a scientific testimony. The mentioned experimenters showed that frogs treated in the manner indicated became invariably œdematous, even when by opening the auricles the flowing off of the traversing liquid had been greatly favored and the pressure employed was an exceedingly low one. The velocity of the off-flowing liquid decreases, of course, simultaneously with the formation of the œdema, provided the pressure of the incoming liquid remains uniform. To avert these drawbacks two procedures in particular have been proposed. The first is that of Sidney Ringer§§ and H. G. Beyer,|| and consists in substituting for the solution of chloride of sodium a mixture of 100 c.c. of a seventy-five per cent. solution of chloride of sodium + 5 c.c. of a solution of chloride of

* *Pflüger's Archiv*, vol. xv., 1877, p. 575; *vide also* Lépine, *Compt. Rend. de la Soc. de Biol.*, 1876, 4 Mars.
† *Proc. of the Royal Sax. Soc. of Sciences; Mathem. Physic. Class*, 1869, p. 189.

‡ *Ibid.*, 1876, p. 45.

§ *Du Bois-Reymond's Archiv*, 1879, p. 385.

|| *Ibid.*, 1880, Suppl., p. 95.

¶ *Ibid.*, vol. xvii., 1883, p. 291.

** "The Physiological and Therapeutic Action of Adonis Vernalis upon the Circulation." Inaug. Dissert. Petersburg, 1880; *vide also* *Schmid's Jahrb.*, vol. xcvi. p. 196, and *Deutsches Archiv für Klin. Med.*, vol. xxxiii., 1883, p. 262.

†† *Du Bois-Reymond's Archiv*, 1885, pp. 519 and 533.

‡‡ "Contributions to the Knowledge of Inflammation." First Communication. *Wiener Acad. Sitzungsber.*, vol. lxxxiv., section iii., 1882, p. 216.

§§ *Journal of Physiology*, vol. iii., 1883, p. 39.

|| "The Influence of Cocaine, Atropine, and Caffeine on the Heart and Blood-Vessels," *Amer. Journ. of the Med. Sciences*, No. 179, 1885, p. 53.

calcium (1 to 390) + 2.5 c.c. of five per cent. solution of bicarbonate of sodium + 0.75 c.c. of a one per cent. solution of chlorate of potassium. This substitution is in many instances to be regarded as a decided improvement. (The results obtained with this solution differ, however, from those obtained with blood, as I shall show in the second part of my paper.)

The second plan proposed for the stated purpose was the employment of an artificial heart.

This substitution has two advantages,—first, the circulation was made to closely resemble the natural state, and then the otherwise inevitable thrombosis and subsequent formation of fibrin, resulting from settling (sinking) blood-corpuscles, was largely prevented. This insertion of an artificial heart has been proposed by L. T. Stevens and F. S. Lee.* Independently of these authors, I also made use of an intermittent pressure in various experiments upon frogs, in which I employed Ewald's† respiration apparatus.

On microscopic inspection of sections of the mesentery, or the web of frog, transfused in the manner indicated, pulsation could be made out even in the smallest vessels, and was seen to closely resemble the natural act, and to prevent the sinking of blood-corpuscles to a certain extent. Such pressure-intermissions imitative of cardiac action are, as M. Gruber‡ has lately shown, also of extraordinary value for the transfusion of organs of warm-blooded animals. This observer found that in transfusions without an artificial heart the pressure is to be gradually increased, if the current is intended to be kept up,—a precaution wholly unnecessary when an artificial heart is inserted.

As to the technique of my experiments on warm-blooded animals, I invariably used blood and organs of the same species of animals which was experimented upon. The principal animals of experimentation were dogs, rabbits, sheep, calves, hogs, and horses, and the principal organs the kidney, the

spleen, the liver, the lower extremities, the entire posterior part, the intestines, and the uterus. Dogs and rabbits (in Dorpat also calves) were always killed immediately before the experiment; the other animals were killed in the slaughter-house, and the respective organs, together with the blood, were brought into the Pharmacological Institute, and used at once. By special provision, the animal temperature of these organs was kept up as well as possible. Diluted§ or strange blood was never used, as I soon found that the latter showed a toxic action. This statement I feel called upon to emphasize in opposition to Salvioli, who employed strange blood mixed with a seventy per cent. solution of chloride of sodium. The organ was enclosed in a heat-box, having a glass cover, the temperature being retained constant at 38° C. The blood had previously been warmed by a similar process. A febrile rise of temperature—39.5° C. and more—is to be carefully guarded against as a certain source of disturbance, due probably to the contraction of the walls of the larger arteries, as observed by Roy and Grünhagen. The arterialization was effected by shaking the blood, and thus mixing it with air.

The concomitant lowering of temperature of the blood was immaterial, as the proper temperature could be reached again before the blood re-entered the organ. The blood reservoir was a double one,—a smaller one for poisoned blood and a larger one (containing a litre) for normal blood. Both communicated above with an air-filled gasometer, the pressure of which was kept at a constant level by means of a Mariotte bottle. This pressure corresponded always to the pressure indicated by the animal during life. By means of a valve I was enabled to supplant the normal blood-current by a poisoned one, and *vice versa*, without interruption of the circulation or alteration of the pressure. Care was taken not to mix the blood flowing from the vein, during the poisoning or immediately after, with the normal current. These experiments were regarded as available only when the alteration in the velocity of the current produced by an introduced poison *disappeared again under the use of normal blood*. In order to render the latter at all feasible the poisoning lasted only ten minutes or less. In the various similar cases recorded in literature

* The action of intermittent pressure and of defibrinated blood upon the blood-vessels of the frog and the terrapin. "Studies from the Biological Laboratory of the Johns Hopkins University," vol. iii., 1884, No. 2, p. 101. (I am greatly indebted to the Johns Hopkins University for the sending of this paper.)

† Ewald and myself first proposed the use of valves for physiological experiments (*Pflüger's Arch.*, vol. xxxi., 1883, p. 167). This contrivance is undoubtedly a very convenient one, as the valves open spontaneously on the slightest excess of pressure, and still close absolutely tight.

‡ Loc. cit., p. 538.

§ I have detailed below some few successful experiments made with diluted blood on rabbits. The larger majority of these experiments failed, however.

we usually find an omission of the statement that the velocity of the current became normal again after the termination of the poisoning. This neglect detracts largely from the value of such experiments, especially when vascular contraction comes to be considered, as it is well known that at the death of an organ the velocity of the blood-current decreases for various reasons. In my experiments the velocity of the current remained almost constant during the first two hours; *i.e.*, became constant again even after repeated poisoning. It was necessary, however, to slowly raise the pressure five to ten millimetres during the stated time. In experiments which lasted four or more hours, the pressure had to be gradually raised fifteen to twenty millimetres in order to reach again the original velocity of the current.

Another point to be considered is the gradual thickening of blood when flowing from a vein into an open vessel, and when shaken up with air. This alteration I endeavored to eliminate by successive additions of small quantities of weakly alkaline solutions of chloride of sodium (physiological solutions).

As to the proportion between the poison employed and the blood, I used such quantities of the former as would be proportionate to the poisoning of the entire body. Substances being insufficient in this concentration were usually likewise also in doses two to five times as large, and have been designated in the charts as having no influence on the velocity of the current. I believe that the reader will have confidence in my experiment when he sees that a large number of substances were examined in which no alteration of the velocity of the current manifested itself. The occasionally instituted experiments with blood-transfusions, as found in literature, are, I repeat, of little value, for the reason that one doubts whether the experimenter has so far mastered the difficult pertinent technique as to procure a uniformity of the current, even when no toxic agents had been employed.

Another very important point in these researches is to avoid introducing into the blood extracts, greasy substances, strongly acid or strongly alkaline agents, as these alter the velocity of the current by themselves without any additional intoxication. For this reason, then, most of the experiments made with ergotine, extract of digitalis, tinctures, and infusions are without value.

It is well known that in these transfusion experiments the central organs of the nervous

system die first. In my experiments, however, I succeeded, when transfusing posterior parts and keeping alive the lower portion of the spinal cord, in two and even sometimes in four hours, to elicit muscular tetanus in the lower extremities by means of strong interrupted currents. Likewise successful, in the second hour, was Bernstein's experiment,—*i.e.*, increase of the flowing-off quantity under irritation of the sciatic nerve with or without curare. The survival of the kidneys* used for most experiments was proven by the existence of renal pulsation, often very distinct in the second hour, but wholly absent in the third. In other organs this pulsation is less distinct or wholly wanting. In order to convince myself of the vitality of such organs, I used as reagent hydrate of chloral in such great dilution as to barely increase the circulation of fresh organs. If this reaction did not appear after a transfusion of two to three minutes, the organ was regarded as dead and was laid aside.

After the termination of the experiment I often used to examine a portion of the organ microscopically. If the poisoning had not been too intense, the microscopic structure appeared, even after two hours, well preserved, save some small hemorrhagic and oedematous defects.

As to the differential behavior of the single organs towards one and the same poison, we can summarily assert that, excepting the kidney and the liver, all organs react alike qualitatively and almost alike quantitatively. This fact advocates the assumption that the toxic effects obtained in these cases refer solely to the vascular walls and not to another origin, such as the specific tissues of the single organs. The exceptional position of the liver can in this manner be also satisfactorily explained, *viz.*, by the extremely scanty development of muscular tissue in the portal vein. I therefore obtained appreciable results with transfusion, beginning in the hepatic artery, while the transfusion starting from the portal vein led, in most instances, to no results. In the case of the kidney, some few active diuretic agents only make an exception from the above stated rule by acting on this organ more intensely than on others. Of this deviation I shall in some later publication treat in a more detailed manner.

Proceeding now to the significance of the variations in the velocity of the off-flowing current, we find that these may be brought about in the following manner:

* The kidneys cannot well be electrified.

1. *Mechanically*, if the consistency of the blood is increased or decreased, or if the pressure under which the blood enters the organ varies, or, finally, if air-bubbles or clots circulate in the blood-channels. I have succeeded in maintaining the consistency of the current at a pretty constant level by aid of the previously mentioned gradual addition of a solution of chloride of sodium, as can be seen from the pretty identical results obtained at the beginning and end of several experiments, by actual counts of the blood-corpuscles, by determinations of hæmoglobin and dried blood-substance. Any great variations in the pressure of the blood were prevented by a sufficiently large Mariotte bottle. If one of the two blood-vessels was opened for the purpose of filling it and the pressure thus lowered, the blood always flowed in this period without any alteration of pressure from the other vessel into the organ. A neglect of this rule caused always great variations in the velocity of the current.

As to the disturbance of the current by clots and air-bubbles, I found that quite a number of experiments had to be thrown aside on account of these interferences. In this connection, the careful warming of the blood after its first passages is to be viewed as an important factor, as subsequent coagulations are always apt to form.

2. *Thermally*, as sensitive organs like the uterus show reactive alterations of their vascular calibre, even upon variations of the blood-temperature amounting to only a few tenths of a degree. In these cases a good thermostat is of great value, though, after having fully tested my own apparatus, I could usually get along without this instrument.

3. *Chemically*, as in such experiments various factors are apt to alter the chemical relations of the blood. Thus it is particularly difficult to maintain the arterial character of the afflowing (entering) current. I candidly confess that my success in this matter has always been limited to certain boundaries. For, even if the blood be poured into both reservoirs as well arterialized as possible, we still find the blood contained in the larger reservoir changing its nature on account of the constant consumption of oxygen, and this long before it is completely empty. On the other hand, Mosso and Ludwig have shown that variations in the percentages of oxygen and carbonic acid exert a definite influence on the blood-current. I had myself repeatedly the opportunity of confirming the above observation. Another factor which causes

gradual changes in the chemical composition of the blood is the formation of acids, such as lactic acid* and carbaminic acid. I have, therefore, added from time to time some alkaline agent, usually Runge's† alkaline solution of chloride of sodium, with the view of thus counteracting to some extent the disturbing influence of acids upon the velocity of the current. Again, we sometimes observe the formation of methæmoglobin, especially when the blood, the temperature being too high, has dried up on the vascular walls. This formation of methæmoglobin appeared to occasionally act as a disturbing agent in the transfusion of the kidneys.

4. *By neuro-muscular action*,—i.e., by the specific influence exerted on the vascular muscular tissue and on the *ganglionic nerve-apparatus* located in the latter. As there is considerable variance of opinion concerning these nervous structures, and as, on the other hand, they play a most prominent rôle in the proper interpretation and appreciation of all of my experiments, I beg to briefly recall such pertinent items as can be safely regarded as established from both the anatomical and the physiological point of view.

(To be continued in our next issue.)

PNEUMATO-THERAPY.

BY SOLOMÓN SOLIS-COHEN, A.M., M.D.‡

BY pneumato-therapy is meant the utilization in the treatment of disease, of those modifications in the performance of the functions of organic life, which are brought about by modifications of the physical condition of the atmosphere in which the patient is immersed, or of the air he breathes, or of both.

The atmosphere may be modified for therapeutic purposes in respect to its density, its temperature, or its humidity. It is of changes of density only—that is, of pressure phenomena—that I desire to speak this evening.

Changes of atmospheric pressure are used in medicine by either of two methods, which have been respectively termed, the absolute method and the differential method.

An absolute change of atmospheric press-

* *Vide* pertinent observations of M. von Frey, *loc. cit.*, p. 562.

† *Zeitschrift für Physiologische Chemie*, 1884.

‡ Chief of Clinic Medical Out-Patient Department, Jefferson Medical College Hospital, Philadelphia. Read before Philadelphia County Medical Society, December 8, 1886.

ure, affects both and equally the respired and the surrounding atmosphere. A differential change affects one of these factors only, or both unequally. Differentiation may be made to (directly) affect inspiration only, or expiration only; or it may be made to affect both phases of respiration, equally or unequally, in the same or in opposing directions.

While it is true, that patients may by change of residence to a more or a less elevated region, be subjected to absolute change in atmospheric pressure, yet this is, after all, but one of the factors in climato-therapy, and a brief allusion to the fact is all that properly falls within the scope of the present paper.

The absolute method in pneumato-therapy is applied by means of apparatus termed pneumatic chambers; a number of which have been constructed and are in use at different points in Continental Europe, but I am not aware of any establishment of the kind in English-speaking countries. The first of these was made, after designs by Tabarie, in 1838. The literature of the subject, however, is much older,* Tabarie having made his first communication to the Academy of Sciences at Paris in 1832, and Jounod having presented his first paper in 1835; while even in the eighteenth century, the attention of naturalists had been directed to the effects of condensed air on animal and vegetable life. Tabarie's cabinet could be used only with compressed air. G. Lange modified the apparatus so that rarefied air might also be employed, and so that expiration, if so desired, might be made directly into the outer atmosphere. In this latter respect, we find the first attempt at differentiation. It was in Lange's cabinet that Von Vivenot prosecuted his valuable and laborious researches. Von Liebig designed for the Mack Brothers at Reichenhall a pneumatic chamber said to be the best in existence, while that of Simonoff at St. Petersburg, consisting of a stone chamber and two iron ones, is said to be the most elegant in its appointments. The patient, or a number of patients, having entered one of these appliances, the contained air is then gradually condensed or rarefied by means of a steam-pump; the pressure being gradually restored to the normal after a sitting of from half an hour to two hours or

longer. Special appliances secure proper ventilation, and permit regulation of pressure, of temperature, etc. These chambers are very costly, and their use necessarily restricted to certain resorts. Hence, for a long while, various attempts have been made to construct cheaper and portable apparatus. The portable apparatus utilize the differential method,—that is to say, the air within the lungs is rendered different in pressure from the surrounding atmosphere.

Changes of intra-thoracic air-pressure can of course be obtained without any apparatus whatever. Thus, if, while nostrils and mouth are closed, forced expansion of the chest be made (Müller's experiment), the air within the lungs will be rarefied; and conversely, if, after a full inspiration, the glottis, or the mouth and nostrils, be closed, and an effort made to contract the chest (Valsalva's experiment), assisted, perhaps, by manual compression (Weber's experiment), the intra-pulmonary air will be condensed. A less degree of condensation may be caused by expiring through but partially-closed lips; and a simple contrivance based upon this principle—a narrow tube, with a ball-valve to resist expiration—produces the same effects as expiration into compressed air. It is obvious, however, that the effect of rarefaction can thus be obtained only during a prolongation of the inspiratory phase of the respiratory act, while compression can be brought about only by a baffled or impeded expiration. The respiratory rhythm is completely deranged, the mechanical force employed and developed remains an unknown and variable quantity, while the disturbance of circulation is usually out of all proportion to the therapeutic value of the expedients.

Resort to apparatus for furnishing a supply of condensed or rarefied air is therefore preferable. Simple matter as the construction of such apparatus should seem to be, it was not until 1870 that any practical device at all fulfilling the necessary conditions was made; and not until 1874 that a reliable apparatus was presented to the profession. To Hauke, of Vienna, belongs the credit of having made the first approach to a suitable instrument; and to Waldenburg, of Berlin, is due the honor of having constructed an apparatus which has served as the model of the best of subsequent ones, and of having placed pneumato-therapy upon a firm scientific basis, by patient and accurate physiological and clinical studies.†

* For historical and bibliographical details, see J. Solis-Cohen, "Inhalation: its Therapeutics and Practice," second edition, Philadelphia, 1876; Oertel, "Handbuch der Respiratorischen Therapie," Leipzig, 1882. English translation by J. Burney Yeo, London, 1885.

† "Die Pneumatische Behandlung der Respirations- und Circulations Krankheiten," Berlin, 1875.

In the arrangement of apparatus for the therapeutic use of compressed and rarefied air, two desiderata must be secured with mathematical precision,—1. The pressure must be a known and controllable quantity; 2. It must be constant, or varied only at will. The physical principles involved, are identical with those involved in a study of the physiological effects of pneumato-therapy; depending upon the properties of the gaseous state of matter, the tendency of matter in whatever state to move in the direction of least resistance, and the fact that the effect of terrestrial gravity upon the atmosphere, is to subject everything upon the surface of the earth to a continuous pressure, which, measured at sea-level, is represented by the weight of a column of mercury 760 mm. (29.9 inches) high,—i.e., in round numbers, fifteen pounds to the square inch.

Two classes of apparatus have been constructed for the utilization of differential pressure. In the one, the air is condensed or rarefied in a receptacle from which the patient inspires, or into which he expires; in the other, the patient is placed within a contrivance in which the air surrounding his body, or a portion of his body, may be condensed or rarefied, while he breathes the ordinary atmosphere. Instruments of both classes were first constructed by Hauke.

We will consider first the most useful class, that in which the patient remains outside the apparatus.

Pressure or rarefaction may be obtained on one of three plans, which may be termed the water-level plan, the gasometer plan, and the bellows plan. The water-level plan depends upon the fact that change of water-level, without entrance or exit of air, in a vessel containing both air and water, will alter the density of the air. This was the principle first adopted by Hauke, and subsequently by Stoerk. Apparatus constructed on this plan simply, are not reliable, and are inconstant. The bellows plan depends upon the fact that a receptacle, with extensible and collapsible walls, may be made by expansion of the cavity to rarefy the contained air, and by contraction to condense it. The lungs work in this manner. The best apparatus for pneumato-therapy constructed on this principle is that of Biedert; one of the simplest and cheapest that of B. Fraenkel. While they are said to have answered admirably, they evidently can easily become fouled if used for expiration, and the pressure does not remain constant. Biedert's is also troublesome to manage. The

principle is simple, however, and means for its employment readily available. Thus, J. Solis-Cohen, in 1866,* used a kitchen bellows to administer inspirations of condensed air, and the same writer in 1880† highly recommended a simple expedient to secure compression, suggested by Dr. W. Y. Gadberry, of Yazoo City, Mississippi,—namely, the employment, after deep inspiration, of an ordinary rubber hand-ball to force an additional quantity of air into the lungs,—as being more useful than drugs in promoting expectoration.

The gasometer plan depends upon the fact that if a vessel open at bottom, and with an opening at top to admit air, which may be closed when desired,—being suspended over water in another vessel, freely communicating with the outer air,—be raised out of the water by a force sufficient to overcome gravity and atmospheric pressure, the air will rush into its interior; that if the cylinder be then closed, the contained air may be rarefied or condensed by adding or subtracting gravity, or its equivalent, to or from atmospheric pressure; and that the positive or negative pressure thus obtained is independent of the volume of air within the air-chamber, which will rise or fall within the water accordingly. Thus we have a ready means of obtaining any desired pressure and of maintaining it, whether we withdraw air by inspiration, or add air by expiration. This is the principle upon which Waldenburg's apparatus is constructed, and upon which depend the modifications of Schnitzler, Weil, Tobold, Finkler and Kochs, and others, all admirable instruments and thoroughly reliable. The best of these are expensive. The minor objections to all instruments of this class are that they are more or less cumbersome, are troublesome to manage, and are not continuously acting, the capacity of the cylinder being of course limited.

This latter objection has been overcome in various ways. Some have so combined two cylinders that one rises while the other falls, and *vice versa*, permitting the patient to use one or the other alternately, with but slight interruption to the process. Geigel and Mayr, whose instrument Oertel commends above all others, have combined a water-level instrument (water-engine bellows) with a gasometer-bell; a series of revolving buckets taking up or discharging a certain quantity

* Op. cit., p. 55.

† Trans. Med. Soc. of Penna., Phila., 1880.

of water to compress or rarefy the contained air, which passes into the bell. This instrument is very costly. The continuous action, which is its great merit, can be secured in a much simpler and cheaper manner, by combining a foot-bellows, such as is used by dentists, with a Waldenburg or other gasometer. This is practically the plan of the instrument which, with the assistance of Mr. Chas. Richardson, I devised in 1883, and which I have already described and exhibited to this society. Originally intended, only to furnish to patients a cheap and safe instrument for home use with compressed air, I have found it capable of modification in other directions; so that when Mr. Richardson has concluded some experiments which he has kindly undertaken to test the feasibility of plans submitted to him, I hope to be able to present to the society an improved instrument, but slightly advanced in cost, which may be used for all the purposes to which the more expensive instruments are applied. Scales and gauges for exact research, may of course be attached to this, as to any other apparatus. To all of the forms of apparatus mentioned, except the simple accordion of Fraenkel, attachments may be added for warming, chilling, drying, moistening, or medicating* the air. Whatever plan be adopted, separate instruments should be used for expiration and inspiration; or two cylinders or bells may be combined in one instrument, as in the "double ventilators" of Waldenburg, Weil, Schnitzler, and Geigel and Mayr. Each patient should have his own mask or mouth-piece.

In order to obtain condensation or rarefaction of the atmosphere surrounding the chest, or the body, of patients unable, or, as in the case of children, unwilling, to undergo treatment by methods requiring their more or less active co-operation, Hauke has devised two forms of apparatus. In one, the chest only is surrounded by an air-tight cuirass, the air between which and the thoracic walls is either condensed or rarefied, the patient respiring the ordinary atmosphere. In the other form, the trunk and limbs enter the apparatus, the face alone being free. A very elegant but more elaborate and expensive means of arriving at the same result, is the pneumatic

cabinet devised by Mr. Ketchum, of Brooklyn, and introduced to the profession by Dr. H. F. Williams of that city. The patient sits in an air-tight cabinet, the air about him being condensed or rarefied, while he respire the ordinary air, which is conducted to his mouth from the outside, by tubing. The respired air is charged with sprays of certain substances.

Were it not for the undemonstrable and misleading claims put forth by the proprietors of this patented instrument, and the questionable propriety of the methods by which it has been placed upon the market, I might pass it with this simple allusion. But since certain claims of historical novelty have misled even so accurate a student as my friend Dr. Platt, of Lakewood, who has completely disproved claims of scientific novelty and unscientific mystery,† I cannot complete this portion of the present article without a plain-spoken denial of these claims. That the instrument is not new in mechanical principle—whatever novelty and merits it may have in mechanical details, from which I have no desire to detract—is proved by the simple reference to the pneumatic chamber of Lange, and the pneumatic cuirass and pneumatic tub of Hauke. That it is not new in therapeutic principle goes almost without saying; for since differentiation of intra-thoracic from extra-thoracic pressure is the sole object, of what moment can it be, whether this differentiation be obtained by raising the one, or by lowering the other? Until those who claim superior virtues for the pneumatic cabinet can prove that the difference between 29 and 30 is either greater or less than the difference between 30 and 31, they will scarcely find general acceptance of their proposition.‡

That the cabinet offers a convenient and elegant method of applying some of the well-known principles of pneumato-therapy, none can deny. Those who prefer it to other and simpler means of accomplishing the same end, are justly entitled to use and express the preference. I simply wish to place on record a flat denial of the assertions that there is any therapeutic novelty about it; or that anything whatever can be done with it, that cannot be done at least equally well, and, in some instances, better, with Waldenburg's, Schnitzler's, or Geigel and Mayr's instrument; or that

* My own usual practice is to pass the air through a Wolff bottle containing a volatile medicament, suspended or dissolved in water, or floating upon the surface of the water. Creasote, terebene, thymol, iodine, benzoin, and similar substances may be thus employed. There are many other ways of medicating the respired air, but this subject is not properly within present limits.

† *N. Y. Medical Journal*, Nov. 6 and 13, 1886.

‡ The questions as to penetration of sprays and vapors are not now under consideration. Dr. Platt's article will elucidate this matter.

the results obtained by its use are any better than those obtained for nearly fifty years in Europe, and for at least ten years in America, with the various methods of pneumotherapy, which I have described this evening.

This will be made clearer as we now pass to the consideration of the mechanical effects of compressed and rarefied air upon circulation and respiration. I say mechanical effects, for these are calculable and measurable with mathematical exactitude. That there must result as well certain other effects, through the nervous system especially, hardly admits of doubt; but the evidence is not perfectly clear and uncontradicted, and the explanation of observed facts is yet involved in obscurity. Not so, however, with the effects due solely to pressure, which follow the same rules as pressure-effects outside the body.*

Let us first review briefly, the well-known mechanism of respiration and of circulation. When by the expansion of the thorax, the contained air is rarefied, the denser outer air tends inward; when the thorax contracts, it compresses the contained air, which tends outward to the now rarer atmosphere. The amount of normal differentiation is small, having been estimated, from observations made in cases of wounds of the trachea, at -1 mm. Hg. during inspiration, and $+2$ to 3 mm. Hg. during expiration. Forced inspiration, however, gives a negative pressure averaging 57 mm. Hg., while forced expiration gives a positive pressure averaging 87 mm. Hg.

The average volume of air which enters or leaves the chest during inspiration or expiration, the *tidal air*, is small, having been estimated at twenty cubic inches; but on forced inspiration this can be increased by one hundred and ten cubic inches of *complemental air*; while forced expiration can expel one hundred cubic inches additional, properly termed the *reserve air*, improperly, the *residual air*; leaving still in the chest one hundred cubic inches of *residual air* or *stationary air*. The term *residual air*, as used in this paper, refers to the latter quantity. The object of this movement of air, is to introduce into the blood O, and to remove from it CO₂. This is accomplished in the alveoli; the air of

which is consequently continually richer in the latter gas, and poorer in the former, than the air of other portions of the lungs; there being by diffusion a gradual increase of one and diminution of the other, until we reach the trachea and larger bronchi, in which the air most nearly corresponds to the outer atmosphere. At each inspiration there is an absolute as well as a percentage gain of O and percentage loss of CO₂; at each expiration there is an absolute loss of both, without percentage change from the end of inspiration, except as effected by the gaseous movement within the alveoli. This movement is in part due to the relatively higher tension of O in the alveolar space, and of CO₂ in the blood, the former passing inward, the latter outward. The volume of O which can be absorbed by the blood is the same at all pressures, but as the weight of a given volume increases with its density, the weight of gas absorbed increases with the pressure. The combination of O with the hæmoglobin, and the liberation of CO₂ from the salts of the plasma, depend largely upon the partial pressure of these gases; association being favored by high partial pressure, dissociation by low partial pressure. Now, both tension and partial pressure, while necessarily depending upon actual pressure, also depend directly upon relative volume, other things being equal. Consequently, whatever tends to increase the relative volume and actual pressure of O in the alveoli, within certain limits, facilitates both its passage into the blood and its association with the hæmoglobin; and whatever tends to diminish the relative volume of CO₂ in the alveoli, within similar limits, facilitates its dissociation from the salts and its escape from the blood.

Whatever increases pulmonary ventilation—that is, the volume of air taken in and expelled during each act of respiration—manifestly increases the pulmonary supply of O, and diminishes the quantity of CO₂; and pulmonary ventilation will be facilitated in one respect by an increase in the negative pressure of inspiration, and in the other, by an increase in the positive pressure of expiration. The weight of O in any given volume of air, and consequently in any given volume of O absorbed into the liquid blood, is of course increased directly as the pressure. Any process that would, while increasing the weight of O absorbed, also increase the rapidity and volume of the pulmonary circulation, would thereby bring a greater number of corpuscles into contact with the greater

* For physiological data and references, see Landois's "Physiology," translated and edited by Stirling. For the physical principles, consult Ganot's or other standard works on "Physics." For elaborate studies, see Waldenburg's and Oertel's works cited. The latter gives full references to investigations up to the date of publication (1882).

number of atoms of O, and thus cause increased oxidation of hæmoglobin.

The elastic tissue of the lungs has a tendency to collapse, which is opposed by the contained air and by the movements of inspiration; creating a condition of elastic tension. The force thus developed has been estimated at 30 mm. Hg. at the end of inspiration, and at 6 mm. Hg. at the end of expiration, or in the dead subject. The elastic traction of the lungs is a principal factor in dilating the auricles when they relax after systole; and the blood-pressure in the auricles being then less than in the *venæ cavæ* and the pulmonary veins, the blood flows into the heart. When the ventricles contract, the pressure within the heart becoming greater than that within the pulmonary artery and the aorta, the blood flows into the pulmonic and aortic systems. As the elastic tension is greatest in inspiration, that movement facilitates distention and filling of the auricles; while at the same time the rarefaction of the intra-thoracic atmosphere, likewise favors dilatation of the heart, and the influx of blood into it and into the *venæ cavæ*. In expiration, the elastic traction ceases to oppose systole, and the compression favors the expulsion of blood from the heart, facilitating likewise the outflow from the aorta and its intra-thoracic branches. Inspiration thus favors circulation, especially through the pulmonic and venous channels; expiration, through the aorta and its subdivisions. An increase in the pressure of the air respired, beyond the limits of ordinary barometric changes, would increase the inspiratory effects due to traction, but somewhat diminish those due to the negative pressure; it would also slightly increase the expiratory effects of pressure, while introducing an increased opposition due to the heightened tension. Diminution of pressure would, of course, have the opposite effect. There is always a slightly less pressure upon the pulmonary veins than upon the pulmonary capillaries, thus permitting the ready inflow of blood through the pulmonary circulation.

We have assumed in this outline study of the relations between respiration and circulation, that the respired air is of the same density as the surrounding atmosphere, and that at the end of inspiration, and at the end of expiration, the pressure within the thorax becomes the same as that upon the periphery of the body; and this is the normal condition. Obviously, if this condition be altered, the circulation will be correspondingly affected. The blood will tend from the point

of high pressure to the point of low pressure,—from the thorax, if the air therein be condensed—towards the thorax, if the contained air be rarefied. In Mueller's experiment, for example, the negative pressure of inspiration is maintained and increased throughout the act. This increases cardiac dilatation; more blood flows into the heart and into the lungs, much less blood is expelled from the left ventricle, so that heart and lungs are engorged and the aortic vessels comparatively empty. The pulse may disappear. The blood-pressure and arterial tension are at first diminished, the arterial tension rising afterwards from vasomotor reaction.

In Valsalva's experiment, there is maintenance and increase of the positive pressure of expiration. The cardiac chambers and thoracic vessels are compressed; no blood can enter the right auricle or *venæ cavæ*; the blood in the lungs rapidly passes into the left heart, thence into the aorta, and out of the chest. The lungs and heart contain little blood, the peripheral vessels are distended, with at first increase of blood-pressure and of arterial tension, which afterwards falls from vasomotor reaction. Notwithstanding the increased pressure, the pulse may be absent from the same cause,—lack of blood in the heart,—to which the absence of the cardiac sounds is attributed.

By the use of apparatus for inhaling compressed air, the negative pressure of inspiration may be converted, as the act proceeds, into a positive pressure—and conversely by making expiration into rarefied air, positive pressure becomes converted into negative. We have then, at first a heightening, afterwards a reversal, of the normal cardiac-respiratory reactions.

One other feature of the respiratory act remains to be noted. One of the forces which the muscles of inspiration have to overcome, and which assists expiration, is atmospheric pressure upon the thoracic walls. The muscular labor of inspiration may be diminished either by invoking the assistance of another force, or by diminishing the resistance to be overcome. The first method is secured by increasing the density of the inspired air over that of the surrounding atmosphere; the second, by diminishing the atmospheric pressure. Reversal of the conditions would impede the act. In a similar manner, expiration may, by pressure-differentiation, be facilitated or impeded.

Having thus fully considered the principal conditions of our problem, we can briefly sum-

marize the observed effects of the therapeutic applications of compressed and rarefied air, with the indications for the employment of these agents.

First, as to the *absolute method*, the method of Tabarie. In this, it is to be remembered, there is a complete change of pressure, the patient respiring air of the same density as that in which he is immersed. The effects of the *compressed air-bath* are due both to the physical changes produced in the air itself by the degree of condensation employed (from one-fifth to three-sevenths of an atmosphere excess pressure, with gradual transitions), and to the increased pressure exercised both upon the interior of the thorax and upon the periphery.

Inspiration becomes easier, expiration being slower and more laborious. As a consequence, the respirations are reduced in frequency and increased in depth, and the mobility of the thorax is increased. These effects continuing after a return to ordinary conditions, the ultimate effect is a gain in vital capacity.

The dilatation of the heart is antagonized, but to a less degree than its contractions are aided; for the normal amount of inspiratory negative differentiation can be brought about by increased muscular effort. Arterial blood-pressure is, upon the whole, lowered, so that the pulse becomes smaller and slower; and the blood tends from the superficies, both respiratory and general, to the deeper parts, and to those vessels contained in cavities with rigid and firm walls. There is increased absorption of oxygen and increased tissue-change, therefore increased nutrition and increased excretion. Upon the nervous system the effects are sedative and soporific. Concerning pathological conditions, both pulmonary and cutaneous, it may be noted that hyperæmia is diminished and absorption of effusions and inflammatory new formations, mechanically favored by compression; exactly as a bandage favors the same results.

The therapeutic indications are found in chronic congestive and inflammatory conditions of the skin, acute and subacute inflammations of the air-passages, chronic bronchitis, pulmonary emphysema unaccompanied by cardiac lesion, bronchial asthma, whooping-cough, pleuritic effusions, and the various forms of pulmonary consumption (in which are included the chronic pneumonias and bronchopneumonias), unless contraindicated by the danger of absorption of septic products present in lungs or bronchi, by high daily fever, by softening or excavation of lung-tissue suf-

ficient to give rise to danger of rupture or of hemorrhage, or by general tuberculosis. Its especial advantage is to prevent extensive lesion in predisposed subjects with incipient disease. It has also been found useful in anæmia and chlorosis, and in obesity. Some observers commend it in certain cardiac lesions; others prohibit it in all. In the absence of personal experience, I can simply express a theoretical leaning towards the more cautious view. Other contraindications are found in states of the brain, spinal cord, or abdominal viscera, in which an increased supply of blood would be prejudicial.

The action of *rarefied air* in the pneumatic chambers is generally likened to the effects produced by ascent of mountains or in balloons, but certain differences exist owing to variation of atmospheric conditions in the higher regions. The rarefied air-bath has not been extensively employed in therapeutics, and as the recommendations made are largely based upon theoretical considerations only, I shall abstain from repeating them.

The *differential method* of pneumato-therapy, is that which is most readily available, most manageable, and, on the whole, most beneficial. Of this I can speak with positiveness, the result of some five years' personal observations. It introduces a new element into our physiological observations,—namely, the possibility of facilitating or impeding the performance of both or either of the phases of respiration, together or alternately. It is, then, particularly applicable in the case of patients too weak to respire properly unaided, or in whom pathological conditions oppose one or the other, or both, of the phases of respiration, or in whom the normal respiratory rhythm has become perverted, whether from excess in one direction or from deficiency in the other. It also produces circulatory effects, due to the difference between intra-thoracic and extra-thoracic pressure,—that is, between the pressure upon the heart, pulmonic vessels, and intra-thoracic systemic veins and arteries on the one hand, and upon the peripheral vessels on the other hand.

Atmospheric pressure upon the surface of the body remaining unchanged, increase of pressure upon the pulmonary surface may be obtained,—1. By inspiration of compressed air. 2. By expiration into compressed air. Decrease of pressure upon the pulmonary surface may be obtained,—1. By inspiration of rarefied air. 2. By expiration into rarefied air.

These procedures may be so combined as to maintain the increase or decrease during

both phases of the respiratory act, or to allow of increase during one phase and decrease during the other. All of these combinations were recognized and described by Waldenburg.

Increased pressure facilitates inspiration and impedes expiration. Decreased pressure facilitates expiration and impedes inspiration.

The facilitation of inspiration or of expiration, or of both, is usually the object of treatment; hence *inspiration of compressed air, expiration into rarefied air*, and the combination of these procedures, are the methods most widely employed. Inspiration of compressed air with expiration into the same medium, which, as pointed out by Dr. Platt, is virtually the method of the pneumatic cabinet, is highly recommended by recent American observers. The effects of these various procedures will vary,—1. With the degree of pressure employed. 2. With the time during which the process is continued; and, therefore, at different periods during its progress. 3. With the amount of voluntary co-operation on the part of the patient. The rationale of these variations being readily understood, and their effect easily deducible from the physiological studies already made, it will only be necessary to give what may be called an average summary under each head. It may first be stated in a general way that the amount of excess or diminished pressure is small,—from one-eightieth to one-thirtieth of an atmosphere; much less than, than in the absolute method. The time varies from ten minutes to half an hour or longer, with interruptions. A period of absolute rest should precede, and another follow, each period of treatment.

Inspiration of Compressed Air.—The excess pressure employed varies from one-eightieth to one-thirtieth of an atmosphere (+ 9.5 to + 25 mm. Hg.). From fifteen to thirty respirations may be made continuously, and the process repeated after a rest of five or ten minutes. The patient, if able, should stand, and, when necessary, the physician may aid inspiration by pressing the shoulders backward, or assist expiration by compressing the chest. When it is desired to localize or locally increase the effect, the healthy side of the chest (*e. g.*) may be strapped, or its motion diminished by manual pressure or pressure against a wall, chair-back, or other suitable object.

The effects, which follow from considerations already detailed, are decrease of muscular exertion necessary for inspiration, dilata-

tion of the alveoli beyond that attainable by voluntary effort; increase in the quantity and in the penetrating power of inspired air,—therefore reopening of air-cells disused from weakness, occluded by the products of secretion and desquamation, or agglutinated from similar causes, and increase in the volume and weight per volume of O brought to and absorbed by the blood; a greater area of blood surface being reached. The subsequent expiration is sometimes slightly retarded, but is deeper, the quantity of air exhaled and of CO₂ eliminated, being increased. Tidal and complementary air are thus increased, reserve air diminished; the first two quantities and a portion of the third quantity, being added to form what is now virtually an increased volume of tidal air, reaching two hundred cubic inches or even more. Diminished frequency of respiration, increased expansion, ventilation, and gaseous exchange, are therefore the immediate effects; increased vital capacity the ultimate and permanent result. The circulatory effects are those of heightened pressure,—namely, an augmented centrifugal tendency of the blood-current; increased force of the ventricular systole; quickening of the pulmonary circulation, bringing more blood, therefore more corpuscles, more hæmoglobin, in proportion to area, into contact with the increased quantity of O; filling of the systemic vessels, with rise of arterial blood-pressure; the pulse becoming at first more rapid, afterwards slower, full, and hard. The blood circulates more actively throughout the body, being richer not only in oxygen, but also in nutritive materials, for pressure upon the diaphragm, transmitted to the abdominal viscera, stimulates absorption of chyme; while heightened pressure and augmented volume of blood in the viscera tend to stimulate functional activity. Thus, increased oxidation and tissue-change stimulate appetite and improve nutrition. Passing to effects upon pathological states,—pulmonary hyperæmia is relieved; inflammatory products are absorbed; cough and expectoration are at first increased, from dislodgment of accumulated materials, afterwards diminished from relief to irritation and diminution of pathological secretions. Increased ingestion and assimilation repair pathological waste, and the increase in weight sometimes exceeds the previous record in good health. Sleep is promoted; night-sweating is often arrested; hæmoptysis is sometimes checked.

Expiration into compressed air impedes the act and requires greater muscular exertion.

If this be sufficient to overcome the obstruction, the amount of air expelled is increased; otherwise it becomes gradually diminished, and the subsequent inspirations are therefore rendered shallower. In other words, tidal air is at first increased, but soon diminished; residual air gradually encroaches upon reserve air, tidal air, and finally upon complemental air; the entire volume becoming practically stationary or residual. The excursions of the diaphragm and thoracic walls become less and less, but at the expense of the contraction, fixed expansion being finally maintained; and if the procedure be pushed to excess with too high a pressure, apnoea may result. Pulmonary ventilation is diminished, and gaseous exchange is retarded; the absorption of O by the hæmoglobin being, however, facilitated, although the excretion of CO₂ is diminished. The effect upon the circulation, is an exaggeration of that produced by inspiration of compressed air, being practically the same as in Valsalva's experiment—depletion of the lungs and heart; over-distention of the systemic vessels, especially the veins. The pulse may disappear from compression of the subclavian artery. Upon pathological conditions, the pressure effects are similar to those already detailed.

Continuous respiration of compressed air, therefore, greatly augments the distention of the thorax and of the lungs, maintaining the patency of the alveoli; and while it diminishes during treatment the volume of air exhaled, the result may nevertheless be properly stated as an increase in vital capacity. The ventilation of the lungs is diminished, but, on the whole, gaseous exchange appears to be slightly increased. There is constantly increasing interference with the dilatation of the heart, and an outward pressure replaces the normal thoracic aspiration of the blood, thus blocking the systemic veins, while at the same time the arteries are distended. Arterial tension, increased at first, soon falls, and the pulse becomes small, slow, and feeble.

Inspiration of rarefied air, which should be conducted against a very small negative pressure, rarely exceeding one-sixtieth of an atmosphere, increases the muscular effort necessary to produce expansion of the chest, and the volume of air needed to supply the proper weight of O. If the requisite effort can be made, there is increase in the elastic tension of the lungs and in the volume of tidal air. If it cannot be made, there is decrease in both these factors. The subsequent contraction of the chest is at first passively facilitated, after-

wards impeded from the resistance of the denser outer air. The muscular effort of this phase is thus also increased, and the frequency of respiration, at first heightened by the excitement of impediment, is finally diminished. Ventilation and gaseous exchange are, on the whole, increased, vital capacity augmented, and the muscles of inspiration strengthened. The blood tends at first to leave the periphery and accumulate within the thorax; but, as there is more blood delivered to the left ventricle, and this can contract with sufficient force to overcome the higher peripheral pressure, the final result is a quickening of the circulation with an increase in the fulness, blood-pressure, and tension of the arteries.

Expiration into rarefied air, conducted with a negative pressure of from one-sixtieth to one-twenty-fourth of an atmosphere, facilitates the contraction of the thorax, exerting a moderate suction-force, and greatly increasing the amount of air expelled from the lungs; thus facilitating the collapse of distended air-vesicles. Subsequent inspirations are rendered easier and deeper; more O-bearing air enters the vesicles; ventilation and gaseous exchange are enormously increased; and the increase in vital capacity is very great. The circulatory effects are similar to those produced by inspiration of rarefied air, but more marked. They vary in different individuals, are evidently different in man and animals, and can be influenced by the manner of subsequent inspiration. While there are conflicting observations as to systemic blood-pressure, there is agreement as to the tendency to pulmonary congestion and the facilitation of cardiac diastole.

The effect of *inspiration of compressed air, with expiration into rarefied air*, is to increase the efficiency of both processes. The alternate expansion and contraction of the lung-tissue stimulates its elasticity. Pulmonary ventilation, both as to interchange of gases and expulsion of effete materials, is vastly augmented. The alternations of opposing circulatory effects relieve hyperæmia wherever present, increase the activity and penetrating power of the blood-current, and stimulate tissue-change and nutrition.

Inspiration of rarefied air, with expiration into compressed air, increases the muscular effort necessary to complete each act, prolongs the respirations, and retards expiration particularly. The alternating centripetal and centrifugal impetus increases the activity of circulation.

Inspiration of rarefied air, with expiration

into the same medium (continuous respiration of rarefied air), increases the muscular effort of inspiration, but hastens and facilitates expiration. The centripetal tendency of the blood is maintained during the entire act, and the heart's action is greatly diminished in force and increased in frequency, the general arterial pressure being much lowered.

THE THERAPY closely follows the physiological indications. The degree of usefulness of pneumatic expedients in any given instance will of course vary with the conditions of the case: and proper hygienic, dietetic, and medicinal measures must also be instituted. In pointing out the classes of cases in which pneumato-therapy is useful, I do not wish to be understood as claiming the method to be competent to cure in every instance.

Inspiration of compressed air, and expiration into rarefied air, are the expedients most generally employed, singly or in combination.

Inspiration of compressed air is of benefit in dyspnoea, of almost any origin; in laryngeal and tracheal stenosis; in chronic bronchitis; in chronic broncho-pneumonitis; in chronic broncho-pneumonitis verging on tuberculosis; in chronic desquamative pneumonitis; in chronic interstitial pneumonitis; in atelectasis; in chronic pleurisy with effusion; in the dry pleurisy of early phthisis; in phthisis at any stage short of general softening, with one or more large cavities, but particularly in the early stages, when deficient respiration, impaired circulation, anæmia, and malnutritive dyspepsia in a predisposed subject, suggest tuberculosis even in the absence of pronounced physical signs.*

The good results of this procedure in phthisis result not alone from the primary effects already alluded to,—the opening of disused or occluded air-cells, with increased vital capacity, increased pulmonary ventilation, increased activity of circulation, absorption of inflammatory products, relief of congestion,—but also secondarily from the increased appetite; relief of cough, with promotion of sleep; and the general stimulus to local and general nutrition, following the systematic pulmonary gymnastics necessitated. In simple anæmia, or chlorosis, without tubercular tendency, the same good effects may be obtained. In asthma,

the inspiration of compressed air is also useful, but high pressures are necessary, and must be cautiously employed. I have succeeded in one case, that of a patient who was attacked in my consulting-room, in cutting short a paroxysm by the employment of a pressure of one-thirtieth of an atmosphere, steadily maintained for nearly fifteen seconds, the expiratory act being held for the time in abeyance. This expedient, which I believe overcomes spasm by a paralyzing effect upon the bronchial muscles, and by inducing fatigue of the diaphragm, was suggested by the experience of Dr. Monell,† who obtained relief in his own person by forced expiration, with his feet braced against the foot-board of his bed, prolonged pause, forced inspiration, pause, and so on. In asthma and emphysema, however, better results are usually obtainable from expiration into rarefied air. In hæmoptysis, good results have been reported from the inspiration of compressed air and its equivalent,—rarefaction of surrounding air in the Brooklyn pneumatic cabinet. Some authors, however, have considered a hemorrhagic tendency as a contraindication to the measure. My own experience leads me to the belief that where there is any weakness of the pulmonary vessels, or any peripheral lesion of hemorrhagic tendency, or where it is inadvisable to increase blood-pressure in the brain, or in the kidneys‡ or other abdominal viscera, the measure is dangerous. In two remarkable instances, elsewhere cited,§ I have, however, been forced to credit it with a tendency to the relief of pulmonary hemorrhage; and this seems to be due directly to the relief of the conditions antecedent to hemorrhage,—namely, pulmonary congestion,—with perhaps an exaggerated stasis at one spot, from mechanical obstructions affecting that portion of the circulatory apparatus chiefly. Inspiration of compressed air is also recommended in mitral insufficiency, and in stenosis and insufficiency of the aortic valves. It is theoretically indicated in dilated heart, and with caution in lipocardiac asthma. I have had no experience with it in any cardiac lesion.

Expiration into rarefied air should be combined with the inspirations of compressed air, where it is desired to increase circulatory activity and gaseous exchange, or to get rid of

* It may be remarked here that evidences of pulmonary impairment, indistinguishable by the ordinary methods of physical exploration of the chest, may sometimes be detected during inhalation of compressed air,—a fact first published, so far as I am aware, by Dr. J. Solis-Cohen. *Vide N. Y. Med. Jour.*, October 18, 1884.

† *N. Y. Med. Record*, August 15, 1866. Cited by J. Solis-Cohen, *op. cit.*

‡ In one of my cases, albuminuria developed during treatment. This may have been merely a coincidence, but at the time I considered it more.

§ *Phila. Med. Times*, February 6, 1886, p. 362.

accumulating and decomposing matters in the interior of the respiratory viscus. *Expiration into compressed air* should be combined with the inspirations of compressed air, when it is desired to relieve congestion, or to stimulate absorption, or when increase of vital capacity is the principal object. Alternation of the combinations may be necessary in some instances.

Expiration into compressed air is recommended in cases of deficient normal expiration, as a means of strengthening the respiratory muscles.

Expiration into rarefied air is of signal advantage in emphysema, and in asthma dependent upon emphysema. It is of some advantage in spasmodic asthma, of less advantage in bronchitic asthma, though of value in all, and in the latter variety may be usefully combined with inspiration of compressed air. *Inspiration of rarefied air* is at times a better combination in emphysema.

Inspiration of rarefied air may also be employed where it is desired to strengthen the muscles of inspiration by increased voluntary exercise, as in cases of contracted thorax in the earlier stages of phthisis, and in convalescence after pleurisy.

That *forced voluntary respiration*, however useful in suitable cases, cannot replace pneumatic treatment by the differential method in cases where the latter is indicated, is evident from the mere statement that it does not produce differential effects; as well as from the fact that many patients are at first incapable of the necessary muscular exertion. As an adjunct or supplement to the differential treatment, or as a means of keeping up the good effects, it often serves excellently.

Pneumato-therapy, steadily growing in favor as the number of physicians resorting to it increases, bids fair to assume at last its proper position among the resources of medical art. It can only be damaged, not benefited, by a tendency to indulge in extravagant claims and reckless assertions. There is nothing mysterious about it,—no miracle, no witchcraft. It has its applications and its limitations, and these are exact and capable of determination, almost with mathematical precision. In practice, the benefits to be derived from it will depend upon its artistic employment,—as the result upon a canvas depends not on the chemical nature of the pigments, but upon the skill with which they are laid on.

As with all other therapeutic devices, including the administration of drugs, the more

clearly we appreciate the pathological conditions present, and the more comprehensive and accurate our knowledge of the powers and limitations of the agent employed, the more skilfully we can adjust the action of the remedy to the requirements of the disease. The first essential, however, is to get rid of the notion that there is anything mysterious in the process, or that it is not governed by the same unalterable laws that affect all other things under the sun, and from which the sun himself is not exempt,—those laws more inexorable than the laws of the Medes and Persians, in that they were not decreed at the whim of man, and cannot be overturned even by rebels against the Legislator.

A CASE OF BASILAR MENINGITIS.

BY W. G. WINNER, M.D., WILMINGTON, DEL.

A. W., the child whose illness I am about to describe, a boy about 3 years of age, was born of healthy parents, and no hereditary tendency to any disease existed, unless it might be that in one of its parents, whose father died of a hemorrhage from the lungs. This boy was the third child in the family, the other two being 4 and 5 years of age respectively, and all of them were nursed from the bottle. The oldest child and this one had been very hearty throughout their entire infancy, but the second child was inclined to be a little delicate. Six months prior to the beginning of the child's present illness he had a furuncular eruption on the face and scalp, which yielded to appropriate treatment, lasting only for a period of about three weeks, and was caused, it was thought, by over-eating, as he was allowed, in addition to the milk, which he still took from the bottle, to partake of the diet prepared for the family, eating heartily of meats and vegetables.

Recovering from this, he enjoyed good health, appeared to be of a rugged constitution, and, with the exception of being slow in learning to talk, seemed to be a bright child for his age, quick to see and to act.

On January 7, 1886, about ten o'clock in the morning, while sitting in his little express-wagon, he suddenly fell over backwards, and was picked up in an unconscious condition, attended with general convulsive movements of the whole body, remaining in this condition for about twenty minutes. On recovering from the convulsion he seemed to be in a dazed and stupid condition, which gradually

wore off during the day, until towards evening, when he appeared to be almost as lively as usual.

The treatment given him for this convulsion was a hot mustard-bath, the inhalation of ammonia, a mustard draught to the stomach, and when he commenced to revive small doses of bromide of potassium were given.

On January 8, in the afternoon, a few minutes after waking from his afternoon nap, he had another attack, similar in character to the first; also one on the 9th, occurring at the same time of day; likewise one on the 11th, 12th, and 15th. A thorough examination had been made to ascertain the cause of these convulsions. The fall from his little express-wagon at the time he had the first convulsion was thought to be merely a result of the convulsive seizure, as it seemed impossible for him to have received any serious injury from a fall of not more than eight or ten inches, and no mark of any kind could be found. After the second convulsion the child was noticed to pick at his nose and to bore into the ear. These symptoms, together with the suddenness of these convulsive attacks, caused a suspicion of the existence of worms as a probable cause of his trouble. One or two thread-worms were found on pressing apart the nates, but neither the injections used nor the medicine given by the mouth caused the expulsion of any worms, or, if any were expelled, they escaped the notice of those who examined the stools. As the child had been placed upon a liquid diet, and the measures used had failed to throw any light upon the case, the bromide of potassium, which had been discontinued after the second convulsion, was again given.

From January 15 to January 20 no convulsion occurred, but on the afternoon of January 20 one occurred, and was followed by two more on the morning of January 21.

By this time other symptoms were manifested, viz., constipation, which was slight at first, was now becoming more marked; there were also light convulsive movements or jerkings, during which the child would throw the hands up to the head, and give a moan or cry as if in severe pain. A slight stiffness of muscles of neck was observed on the 22d, and slight enlargement of the cervical lymphatic glands. The stiffness of the muscles noticed on the 22d became more marked on the 23d.

As these symptoms indicated a trouble of a very serious nature, and rendered the prognosis very unfavorable, a consultation was held with Dr. H. C. Wood. It was then decided to continue the diet of milk, with

light broths, and a little arrow-root starch or tapioca, and to place the child upon a combination of bromides, viz., bromide of potassium, grs. x; bromide of lithium and bromide of sodium, aa grs. v, daily, in divided doses. The iodide of potassium, 5 grains daily, was also given.

On January 23 the child's condition seemed to be getting worse. He was irritable, appetite poor, and the light convulsive attacks were numerous. The temperature, which was normal in the morning, showed an elevation in the evening of about one degree and a half, and a correspondingly quickened pulse-rate.

On the 24th a blister was placed on the back of neck, his appetite was a little better, and he rested fairly well at night, the temperature being but slightly elevated. An expression of dulness, which had developed about the 20th, was to-day very marked, and the muscles of neck more rigid.

Blistered back of left ear on the 26th, and as symptoms of bromism existed, the amount of bromides taken daily was reduced one-half. No evening elevation of temperature to-day, but light convulsive movements numerous in the forenoon, and occurring occasionally in the afternoon. The child is still peevish, but takes food a little better.

January 28.—No severe convulsion has occurred since January 21 until to-day, when two convulsions took place, and the light attacks are numerous.

January 30.—Increased the combination of bromides to full strength, and continued the same until bromism was again developed. A blister was placed back of right ear.

January 31.—The appetite not quite so good to-day, probably an effect of the bromides. The bowels have been kept open so far during his sickness by enema mainly, but sometimes by medicine given by the mouth. Gave four $\frac{1}{4}$ -gr. doses of calomel to-day, repeating the same on February 1, when the bowels moved three times. The temperature on the evening of February 1 was 100.8°, late in the evening, this being the first elevation noticed for several days.

On February 2 the bowels moved three times again; no calomel given since the morning before; the light attacks not quite so numerous as on the 1st, but glands of neck becoming still more enlarged. Bromide mixture reduced down to one-quarter strength, but continued the iodide as usual.

February 3.—Light attacks not so numerous as yesterday; appetite poor; bowels

moved three times again. In the afternoon he awoke from a sleep of about three hours with considerable dulness, and in about twenty minutes had a convulsion, lasting for two or three minutes. As I have not described any of these convulsions, I will do so in regard to this one, as I had an opportunity of witnessing it. It commenced with a twitching of the hands and a falling forward of the head. At the same time the arms were thrown upward towards the head, eyeballs turned upward, and a rapid moving of the jaws occurring, followed by partial opisthotonos, and recovering from the convulsion with a gasping and a yawning, and then a cry as if from fright. At no time in any of his convulsions was any frothing of the mouth observed, nor was the tongue bitten. These severe convulsions generally lasted for several minutes, the first one that he had being about the longest one in duration, viz., about twenty minutes.

February 4.—Ceased giving the bromides to-day, as there did not seem to be any benefit arising from their use. Another convulsion to-day, but not quite so severe as the one yesterday. Gave three $\frac{1}{4}$ -gr. doses of calomel to-day.

February 5.—Bowels moved twice to-day. Appetite seems to be improving since suspension of bromides.

February 6.—Blistered back of neck. Child seems a little brighter to-day.

February 8.—No change since the 6th in his condition. Gave four $\frac{1}{4}$ -gr. doses of calomel to-day.

February 9.—Another convulsion occurred, but not quite so severe as the last one.

February 11.—Blistered back of right ear.

February 14.—Not quite so well to-day as he has been; light attacks (convulsive) more numerous.

February 17.—Light convulsive attacks not quite so numerous. Bowels moved by giving two $\frac{1}{4}$ -gr. doses of calomel. A blister was placed back of right ear.

February 18.—Light attacks not so numerous, but for the last four days he cannot control the passing of water. Appetite during this period seems better. Gave four $\frac{1}{4}$ -gr. doses of calomel, but bowels moved only after an injection had been given late at night.

February 19.—Slight symptoms of salivation presented, but otherwise he remains about the same. The light or momentary convulsions, which have been occurring every day for several weeks, ceased to-day about noon, but their cessation was preceded by a convulsion of four or five minutes' duration.

February 21.—A blister was placed back of left ear.

February 25.—No light attacks have occurred since the 20th. Bowels, although very constipated, have moved naturally for the last three days. Blistered back of right ear. Commenced giving cod-liver oil to-day, and anointing the enlarged glands with an ointment, viz., ungt. belladonnæ, ungt. hydrarg., equal parts.

February 27.—Light attacks commenced again to-day, and in the evening he had four convulsions.

February 28.—Blistered back of neck.

March 2.—Another convulsion to-day. Bowels still constipated, but moving naturally. A little blood has been noticed on fæces for several days. This appears to be hemorrhoidal in character, and is probably due to the constipation.

March 4.—During the night had three convulsions. Have run the amount of iodide up to 12 grs. per day.

March 8.—Three convulsions in the morning. Iodide has been gradually increased until 30 grs. per day are taken, and symptoms of iodism developed.

March 9.—Dropped iodide to 16 grs. per day.

March 13.—A convulsion occurred in the morning; light attacks very numerous; he also has the hiccoughs.

March 23.—The hiccoughs, although severe for several days, have ceased; one convulsion to-day.

March 27.—Two convulsions.

April 16.—For the last two or three weeks light attacks occur almost constantly during the day. The child cannot walk nor stand alone; cannot feed himself. The dull expression about the eyes is now very marked, and his appearance is one of helplessness. The boy has been losing flesh very rapidly.

April 19.—Two convulsions to-day. After they had occurred he has better use of his limbs, being able to stand alone.

May 15.—A convulsion during sleep, and the first one noticed to occur while sleeping. The light attacks do not now occur. Muscles of neck are not quite so rigid, and the glands are lessening in size.

From May 15 the patient has gradually improved. No convulsions have occurred up to the date of writing this article (November 13, 1886). The stiffness of muscles of back of neck still exists to a slight extent. The lymphatic glands are also a little enlarged, but both the stiffness of muscles and enlarge-

ment of glands are still subsiding. He has improved in his speech, eats heartily, and is quite active upon his feet. He has gained considerable in weight, and seems almost as well as previous to his severe illness. The number of severe convulsions which the child had is about thirty-five, and these were from one to twenty minutes in duration.

*GALVANISM AND BROMIDE OF QUININE
IN THE TREATMENT OF CHRONIC
CATARRH OF THE MIDDLE EAR.*

By J. A. PATTERSON, M.D., SALEM, N. J.

CHRONIC catarrh of the middle ear and its usual attendant, tinnitus, is a disease whose treatment has never been very satisfactory.

In the great forward strides made in both therapeutics and surgery at the present day the treatment of this affection has made comparatively very little advance, therefore I offer these remarks, crude as I know they are, hoping they may be of some value towards the more successful relief of tinnitus aurium and progressive loss of hearing.

I have many times been struck by the similarity of cinchonism and the symptoms of catarrhal deafness, and reasoned that quinine must have some specific action upon the middle ear, for we know where cinchonism has been kept up in a patient for a lengthy period a chronic congestion of the middle ear is often produced, leaving impairment of hearing in greater or less degree, and often tinnitus.

Reasoning from analogy, I determined to try the effect of quinine in small doses in such cases, but in two instances in which I used the sulphate my patients derived no benefit. Now, it is a well-known fact that bromine in its various combinations, as bromide of potassium, sodium, etc., controls and lessens the blood-supply to the cranium, and will often mitigate somewhat the roaring which these patients experience in their diseased ears, so I thought that probably a combination of bromine and quinine would act better. Accordingly I procured some bromide of quinine. The first patient upon whom I tried it was a lady with history as follows:

Right ear: abscess three weeks ago; drum membrane shows pin-point perforations, opening valve-like upon inflation of the middle ear; watch heard at four inches. Left ear: hearing *nil* from purulent catarrh, which followed scarlet-fever in childhood, and existed

up to the age of thirteen years. Deafness and tinnitus in both ears,—in left ear for a number of years, in right ear progressing for the past six or eight months. She consulted me very irregularly for several months, and was somewhat improved by galvanism applied directly to the ear, one electrode, moistened with a saline solution, being introduced into the external auditory meatus, and various remedies. Upon May 20 I put her upon grain-doses of bromide of quinine t. i. d. In three days she returned, saying she had used the medicine faithfully, but it increased the tinnitus so much she had to abandon it, since which time it has decreased to its usual intensity. She frankly stated she believed I had given her quinine, as she readily detected its usual effects upon her, and as I compounded the recipe in person, I knew she had no opportunity of reading the prescription. I then gave the drug in $\frac{1}{4}$ -gr. doses t. i. d., with slight improvement. June 10 I began giving it in $\frac{1}{10}$ -gr. doses four times a day, still continuing the use of galvanism, when the hearing began gradually to improve, until it reached in right ear nine inches for watch; tinnitus *greatly* improved. She has now stopped treatment, saying she hears well enough, and the tinnitus is so slight as to cause no annoyance.

The second case. Mrs. —, æt. 55, came to me for deafness of many years' duration and intolerable tinnitus of over a year's duration. There was found to be a large perforation in the membrani tympani of each ear, following aural discharges in very early childhood. Watch could not be heard at contact in either ear. Under three months' treatment, by weekly applications of the galvanic current, and quinine bromide $\frac{1}{10}$ gr., four times a day, there has been a gradual improvement in hearing, first by hearing the watch at contact, and on last consultation she reported having heard the entire sermon at church, sitting in her accustomed pew, the same clergyman as usual occupying the pulpit; the first sermon she had thus enjoyed for some years. The tinnitus has greatly and decidedly improved, and from being very despondent she is in much more cheerful spirits owing to its decrease. She is now out of town on a prolonged visit, therefore I have for the time lost trace of the case.

Other cases in which I had begun giving this remedy have failed to report themselves, consequently no data can be thus obtained.

In conclusion, I would say that systematic, prolonged use of galvanism, combined with systemic treatment, will do more for the relief

and cure of chronic catarrh of the middle ear than any mode of treatment I have yet tried (attention to the health of the nasal and pharyngeal mucous membrane, of course, never to be overlooked or neglected). It is necessary that the physician should know that the results are often slow and gradual, although in some instances very rapid results are obtained, as the following case will show :

A. C. K., æt. 56, consulted me November 17 for tinnitus and deafness in left ear for past ten months, gradually increasing. Politzer's inflation shows Eustachian tubes patulous, although there exists a chronic rhinitis. Membrana tympani intact and of dusky hue. I prescribed an alkaline wash for the nose, and applied galvanism.

November 23.—Since last consultation no tinnitus, and hears better.

December 7.—Hearing improving ; momentary returns of the tinnitus noticed ; same treatment.

December 29.—Been entirely free of tinnitus for two weeks, which is the longest freedom he has had for nearly a year. Hearing greatly increased, so as to be now, he thinks, normal. He then discontinued treatment.

I close, hoping to be able to report continued good results from the bromide of quinine treatment.

213 BROADWAY, December, 1886.

THE THERAPEUTIC INDICATIONS IN DIFFERENT TEMPERAMENTS.

By W. G. KEMPER, M.D., OMAHA, MO.

THE recognition of the temperament of a patient is in many cases nearly as important as the diagnosis of the disease. It would be better understood why maladies in a given family have certain peculiar features and tendencies, and the treatment, as well as the prognosis, would be simplified if the subject was always taken into consideration.

The physician who, by long practice and careful observation, has acquired a knowledge of the peculiarities of his patients, is said to "know their constitution," and is, therefore, trusted to a greater degree, and deservedly so, for his methods are more scientific and successful than the practice of many who apply routine remedies to the same disease without taking the temperament into consideration. Idiosyncrasies and the unusual action of drugs, instead of surprising us, should be expected.

In olden times temperaments were supposed to be due to the relative presence of *fire, water, air, and earth*, and were divided as follows: "The *choleric* where the warmth, the *phlegmatic* where the moisture, the *sanguine* where the air, and the *melancholic* where the earth has the upper hand."* But it is now understood that the temperaments are due to the relative development and energy of the nervous, muscular, lymphatic, or circulatory system.

The words constitution, diathesis, and cachexia are sometimes misused for temperament. *Constitution* refers to the state of health, or the power to resist disease; *diathesis*, a tendency to certain diseased conditions; and *cachexia*, the actual presence of a certain diseased state.

The NERVOUS (*Mental*) temperament, depending upon the predominance of the nervous system, is characterized by a comparatively large head and small body; a long face, with a high forehead; the bones and muscles small but well formed; chest and shoulders narrow; the complexion is usually light, but may be dark; the skin delicate, generally moist, but rough when dry; the hair fine, soft, dry, and not abundant; the teeth small and separated; nutrition is imperfect; the appetite poor; stomach and viscera small; not much adipose tissue. Urine is abundant, containing alkaline phosphates; the fecal discharges small. The pulse is small, hard, and quick; the movements quick and active. There is great activity of the mind, a lively imagination, an excellent memory. Great sensitiveness to pain, and but little power to resist disease or starvation. Often displays idiosyncrasies, and is therefore difficult to treat. The diseases are usually due to overwork. In many cases a tendency to insanity, neuralgia, and other nervous affections is present. In low fevers there is apt to be great restlessness, delirium, and much wasting. In the treatment, rest, nourishment, tonics, and sedatives are indicated.

The MOTIVE (*Bilious, Choleric, Melancholic*) temperament, depending upon the predominance of muscular system and its "supply depot," the liver, is distinguished by a long angular figure, with firm, rather full, muscles; the face narrow, of dark, sometimes sallow, complexion; hair and eyes dark; the skin dense; nails hard and of slow growth; the teeth large; stomach and viscera small; pulse hard and slow; disposition harsh and stern,

* Lavater.

often sad ; nervous system in good condition, but prefers physical to mental labor ; but little tissue-change takes place, hence little food is required ; great power of endurance to pain, starvation, or disease. Biliousness and malaria are the most common diseases in this temperament. Purgatives are usually indicated. In low fevers the prognosis is good, as there is but little waste.

When this temperament is blended with the nervous, we are apt to find a small figure, with a dark complexion, whose movements and actions, though generally slow, are quick, active, and passionate when aroused. When blended with the sanguine, the nervous system being poorly developed, we have the immense bones and muscles and comparatively small head of the prize-fighter.

The **SANGUINE** (*Vital*) temperament, depending upon the predominance of the circulatory system, is recognized by the broad, rotund figure ; full chest ; muscles firm and well developed ; face round and florid ; hair and eyes light ; skin smooth and fair ; the nails pink and soft ; the teeth even and undecayed ; abdomen well developed, and the digestive powers perfect ; disposition pleasant and cheerful ; nervous system in good order ; blood-making powers strong ; the actions and movements strong and graceful ; pulse strong and frequent. The urine is of high specific gravity ; the fecal discharges small. There is great resistance to disease, but when affected it takes an active, rapid course. Inflammation, gout, rheumatism, and allied disorders are most frequent ; and the remedies indicated are blood-letting, sedatives, alkaline salines. In low fevers the prognosis is unfavorable, on account of the high fever, but the crisis once passed will rapidly recuperate.

As age advances this temperament often becomes blended with the following :

The **LYMPHATIC** (*Phlegmatic*) temperament, depending upon the preponderance of the lymphatic system, is characterized by the large, bulky body ; broad shoulders ; bones large ; muscles large and flabby ; short, fat neck ; round, pale face ; light hair and eyes ; skin dense ; nails large and brittle ; teeth large ; abdomen large ; great amount of food required ; nervous system not well developed ; mind not active, but the memory good ; moves about slowly and indolently ; circulation slow ; pulse slow and soft ; dilatation of the heart ; constipation, diarrhoea, piles, and other bowel complaints are the most frequent diseases. Inflammations are not usually severe, but are apt to become chronic. Fevers seldom high.

Purgatives, stimulants, and heart tonics are indicated. In low fevers the prognosis is bad, and convalescence extremely slow, requiring plenty of food, stimulants, and tonics.

Polysarcia usually comes on after middle age, which may be prevented by exercise, nitrogeous food, and but few liquids, especially during meal-time.

Where all the temperaments are blended we would expect to find a perfect constitution, that, like the *wonderful one-hoss shay*, would *wear out*, but never *break down*.

1336 S. 17TH ST.

*APOCYNUM CANNABINUM IN DROPSY.**

By J. A. LEWIS, M.D., ITHACA, N. Y.

IN reply to the query of Dr. Peters I have to report the history of a few cases of pleurisy with effusion treated with apocynum cannabinum. I prefer to give those cases that fell in my hands after the effusion was well marked.

CASE I.—J. C., aged 13, male, January 15, 1885. Was taken sick January 7 with initiatory chill, followed by high fever, cough, and rapid respiration ; effusion well marked ; level of fluid at fourth rib. Treatment : fl. ext. apocynum cannabinum, \mathfrak{z} i. Five drops every three hours.

January 19.—Feels better ; fluid disappearing ; at level fifth rib.

January 29.—Fluid entirely gone ; appetite good ; temperature and pulse normal ; discharged.

CASE II.—January 24, 1886. George P., aged 18 ; barber ; taken sick with pain, fever, and rapid respiration.

January 1.—Confined to bed two weeks ; improved, and was able to walk out ; had been treated for intercostal neuralgia. Physical examination revealed the fact that his left pleural cavity was entirely filled with fluid ; was given fl. ext. apocynum cannabinum 20 drops every four hours ; free catharsis took place after the fourth dose ; drug diminished to 10 drops every four hours ; rapid recovery took place, with complete expansion of lung and normal respiration February 15.

CASE III.—March 28, 1886. John C., aged 14 ; waiter-boy on railroad. After violent exercise, February 10, 1886, was taken with chill, followed by fever, cough, slight pain in side. Nothing was done for him

* Read before the Materia Medica Section of the New York Academy of Medicine.

until he came to me, March 28; right pleural cavity nearly filled with fluid. Treatment: fl. ext. apocynum cannabinum. Ten drops every four hours were given. Lived six miles from me, so did not see him again until June, when I met him by accident. His story was that he got well in a week, and went to work May 3, 1886.

CASE IV.—Mrs. P., aged 43. History of latent pleurisy of four weeks' standing of left chest; complete flatness on percussion; heart to right of sternum; no vesicular murmur in lung. Change of position did not alter the physical signs. Advised aspiration, which she would not consent to until drugs had been tried. Treatment: fl. ext. apocynum cannabinum, gtt. xv; potassæ iodidi, gr. viii, per dose every four hours.

May 5.—Feels a little better; treatment continued, and by May 18 all fluid had disappeared, and she has remained well since.

CASE V.—Susie G., aged 23; shop-girl. History of latent pleurisy; right chest filled with fluid to fourth rib; has been treated for intercostal neuralgia. Treatment: fl. ext. apocynum cannabinum, gtt. x, every four hours. Fluid rapidly disappeared, and she remained well until December, when I was called by Dr. Winslow to see her at his office. She then had aphonia from ulceration of the vocal cords, which is undoubtedly laryngeal phthisis. There was no fluid in the chest. He has since lost track of her.

CASE VI.—Harris B., aged 3, son of Dr. Beckwith, of Ithaca. Taken sick July 10; chills, fever, slight cough, and pain in abdomen. Was asked by the doctor to see him July 18, when we found right chest nearly filled with fluid. Advised fl. ext. apocynum cannabinum, gtt. ii, every two hours, until free catharsis took place, then to diminish to 1 drop. The fluid entirely disappeared in fourteen days. He has since remained well.

CASE VII.—Grace C., aged 4 years. History of acute pleurisy, commencing November 10; right chest filled with fluid. Treatment: fl. ext. apocynum cannabinum, gtt. iv, every four hours; complete recovery in fifteen days.

MULTIPLE ABSCESS OF THE LIVER.

By J. A. BACH, M.D., MILWAUKEE.

ALTHOUGH by most surgeons the early evacuation of an abscess is considered a surgical axiom, it has many times occurred to me why non-interference in abscess of the

liver is so generally advised. Even with our present knowledge of antiseptic surgery our authors are extremely cautious, and seem to be fearful of bad consequences in the event of free opening and drainage of abscess of the liver.

During the last few weeks I had occasion to meet with a very remarkable case of multiple abscesses of the liver, resulting from pyæmia, the treatment and the results of which might be of interest. The history of the case is briefly this:

Albert Schuette, æt. 9, residing at 302 Twenty-fourth Street, while playing about the school-house, fell and struck upon his left hip, while another little boy fell upon him, striking his body at about the region of the liver. The next day he complained of pain in his left thigh, and also of difficulty of breathing, probably from a slight pleurisy. The parents of the little boy, thinking this only transient, did not pay any attention to it until about the tenth day, when I was called. Upon examination I discovered a large abscess on the left thigh, which seemed to involve the periosteum of the femur. I also discovered a great enlargement of the liver, in the region of which the boy felt a good deal of pain. At this time that peculiar pasty, jaundiced, and exhausted appearance was quite prominent. Temperature 103°, pulse 128. The abscess on his thigh was freely laid open, and discharged from four to five ounces of pus. The after-treatment with carbolic acid washes, etc., soon effected a complete cure of this, but the temperature still remained high. I directed hot fomentations over the liver, and in a few days, upon re-examination of this region, the liver was still much enlarged and quite sensitive. In the lower region of both the right and left lobes of the liver I now discovered two tumors, each about the size of a goose's egg. The tumors being rather deep-seated, I could not clearly detect fluctuation, but verified the presence of matter therein by the introduction of the hypodermic needle, with which I withdrew about five grains of pus. I now directed poultices of linseed, and after a few days the tumor of the right lobe could be much more clearly felt, as it began to point outwardly. Fluctuation could now be felt, and as the case was quite urgent, temperature 103½°, pulse 130, and the boy was rapidly losing strength, I decided, without waiting for any further developments, to freely lay open the abscess, and accordingly the next day, with the assistance of Dr. Frank, this was

done. A careful incision of about two inches in length, and extending down into the cavity of the abscess, gave vent to about four ounces of thick, greenish pus. As this discharged, care was taken not to allow any to leak into the peritoneal cavity. After evacuation of the abscess, a horseshoe rubber drainage-tube was introduced, through which the cavity was carefully washed out every day with carbolic acid solution. After three days the abscess of the left lobe was treated likewise. Of course, before as well as after the operation, antiseptic precautions were taken. The boy made a perfect recovery.

48 JUNEAU AVENUE.

*PERMANGANATE OF POTASSIUM IN AMENORRHŒA.**

BY DR. H. I. BOLDTS, NEW YORK.

IN view of the interest and importance of Dr. Billington's paper, and the discussion which it has evoked, I have looked over my records, and report the results and the conclusions at which I have arrived.

I have been able to follow forty-three cases, and find that in the class of robust persons who have recently made a sea-voyage, have then menstruated scantily, or missed altogether two or three times, that the permanganate of potassium, given in 1-grain doses three times daily, after meals, up to within one week of the expected catamenia, then the dose to be increased to 2 grains three times daily, it has been effectual and permanent in each instance, the number of cases of this class being fifteen.

Out of seventeen patients who were anæmic or chlorotic, only two patients derived benefit from the permanganate of potassium treatment employed alone; one of these, a chlorotic, at her next epoch, she having missed four months entirely, and the two preceding periods being very scanty, the flow lasting only a few hours, had such profuse flow that I felt it necessary to give ergot. The remaining fifteen patients derived benefit, more or less, only by general tonic treatment, viz., hygienic, dietetic, and medicinal.

The next class of patients, eleven in number, were well nourished, some plethoric, and no particular cause could be found for the amenorrhœa. In seven of these the remedy produced the desired effect one time only, in

three for two months, and in one for three periods; after that the drug had no effect. In three of the first seven cases the epoch was established again regularly and normally, without any more cause than could be found for the origin of the complaint.

My conclusions, then, are: That in such as the first class of patients cited, the permanganate of potassium is "the" remedy. In the second class, it is of service only when employed in connection with such treatment as would have a tendency to overcome or help the cause of the amenorrhœa; and in the third class the results are very variable, failures being, in my experience, the preponderance.

With the binocide of manganese my experience has been too limited to speak. The administration of the remedy has given the best satisfaction in my hands when the crystals are put up in ordinary gelatin-capsules, one capsule to be taken after eating, followed by a glass of milk or soda-water. The gastric disturbance has then been usually very little or none; but four patients out of the total number of forty-three have had much cause to complain. The number of patients for whom the remedy has been prescribed has been considerably larger; but, as we all know in public practice, it is very difficult to keep patients under observation, as is also the case with many private cases. The mentioned number, however, have been successfully observed by me. Dr. Billings, I believe, mentioned the usefulness of the potassium salt also in menorrhagia. I have tried it also in this condition a few times, but with total failure. The *hydrastis canadensis* has given fair satisfaction for this complaint in my hands. Lately, the latter drug has also been recommended by Mendes de Leon in this and other pathological conditions of the female organs of generation, such as dysmenorrhœa resulting from displacement of the uterus, and chronic pelvic cellulitis.

411 SIXTH STREET.

PILOCARPINE IN RHEUMATIC TETANUS.

BRÜNAUER treated a case of tetanus of rheumatic origin, where the slightest irritant produced violent spasms, with subcutaneous injections of pilocarpine, 2 centigrammes in each dose. Other modes of treatment tried during five days had failed. The injections, with use of the chloral at night, resulted in recovery after an illness of two weeks.—*Deutsche Medicinal Zeitung*, No. 61, 1886.

* Read before the Materia Medica Section of the New York Academy of Medicine.

The Therapeutic Gazette

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PHILADELPHIA.

DETROIT, MICH., Jan. 15, 1887.

GEO. S. DAVIS, Medical Publisher, Box 470.

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(Journal increased to 72 pages.)

THERAPEUTIC GAZETTE (postage included).....\$2.00
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Editorial communications should be addressed 1025 Chestnut Street, Philadelphia. Business communications should be addressed to the publisher.

Leading Articles.

CEREBRAL PNEUMONIA.

IT is but a trite saying that in pneumonia the cerebral symptoms may be so severe as to mask the lung-disease, but as the time of year is upon us when cases of this character are especially apt to occur, we feel justified in calling attention afresh to the subject.

In old people, and especially in drunkards, delirium may be so violent as to call attention away from the pulmonic symptoms, which, indeed, may be so slight as not to be perceptible at all, except in that counting the respirations will usually show a marked acceleration of the breathing rate.

In children the evidences of the symptoms of a cerebral inflammation may appear to be complete. Headache, constipation, great prostration, fever, delirium, convulsions, opisthotonos, and strabismus may unite to form a picture of an attack of cerebro-spinal meningitis so close to reality that even a careful, well-informed practitioner may be misled. In some cases there is a peculiar cry like that of meningitis. If, under these circumstances, the cough be suppressed, suspicion may not be at all aroused. Moreover, even if the practitioner be wide awake, the physical signs of pneu-

monia may be so masked as scarcely to be discoverable. Grisolle, as quoted by Prof. Alfred L. Loomis, affirms that in a majority of cases of senile pneumonia exploration of the thoracic organs gives negative results. We think that this statement is not absolutely correct. We have seen a number of cases in which the crepitant râle was entirely absent, some in which even bronchial breathing was suppressed, and others in which the only physical signs were an absence of true respiratory murmur and dulness on percussion. It is possible that a transmitted respiratory murmur may in some cases be heard, but we can scarcely conceive that distinct percussion dulness can be absent in pneumonia of the adult.

In young children the pulmonic physical signs may be exceedingly obscure. Some years since it was our duty to perform an autopsy upon a child who had been attended by the late Dr. John F. Meigs and another practitioner whose name we omit, as its possessor is still living. The child was the son of a leading merchant, was attended with the utmost care by these two gentlemen, who would at the time have been acknowledged to be the leading practitioners of Philadelphia. Nevertheless, after the baby had been treated for nearly two weeks for pneumonia of the right lung, the autopsy showed that the right lung was nearly normal, only secondarily congested, whilst a pint of purulent effusion filled up the left chest cavity. Quite recently we saw a case in a child three years of age in which the symptoms were high fever, convulsions, strabismus, fixed rigidity of the neck, with, on the third day of the disease, collapse, from which a reaction was with great difficulty obtained. The most careful examination by Professor Da Costa and ourselves, on the third day of the disease, revealed only slight relative dulness over the posterior portion of the right lung. No change was perceptible on auscultation, and even the percussion note was distinctly tympanitic, only a little less so than that of the opposite side. After death, which took place on the sixth day, pneumonia was found, with intense congestion of the brain and of the pia mater, but no fibrinous or purulent exudation at all about the brain. There was much more serous fluid in the brain than should have been, but microscopic examination failed to detect any outwandering of corpuscles from the vessels or any pus-corpuscles.

The matter is made still more difficult by the fact that meningitis may develop in pneumonia. It probably is not possible to say

with certainty in a case of pneumonia, whether the meningeal symptoms are the outcome of a true meningitis or simply of a meningeal irritation. The practical fact, however, in these cases is that the pneumonia is the important primary affection, against which in chief part treatment must be directed. When the physical signs are very much masked, aid in the diagnosis can be often obtained from the symptoms themselves. Thus, especially in children, the temperature is much higher in cerebral pneumonia than in simple meningitis. In the case which has already been detailed the temperature, although checked by the free use of antipyrin, and repeated applications of cold to the head and body, several times reached 106.8° , and would, we believe, if it had not been interfered with, have gone to a point at which it would have killed the child by thermic fever.

The importance of the temperature is enhanced by noticing that it is out of proportion to the intensity of the meningeal symptoms. Thus, in our case, on the fifth and sixth days of the disease the meningeal symptoms were less marked than they were on the fourth day; the neck was not quite as stiff, there was no increase of stupor, the strabismus was less, rather than greater than it had been, and no convulsions occurred after the beginning of the second day. Fulminating sthenic meningitis is an excessively rare disease in children; although it is elaborately described by writers, we are sometimes tempted to doubt its existence, and to believe that the cases in which the diagnosis has been confirmed by the autopsy were really instances of the constitutional affection in cerebro-spinal meningitis, or were examples of imperfect autopsies at which the attention has been drawn away by the secondary affection from some original lesion.

THE TREATMENT OF WHITLOW.

FROM time immemorial the treatment of whitlow has consisted in the early performance of deep incisions carried down to the bone and prolonged poulticing. This routine treatment is in the main accepted by most surgeons, yet great varieties of opinion are held as to the time when incision should be performed, the locality, and the duration of poulticing, it being held by many that the necrosis that so often follows this affection is due to the prolonged heat from the poultice

as much as to the disease itself. The subject recently has been attracting considerable attention, and Mr. Allingham (*Medical Press*, September 29, 1886) shows that there are several varieties of whitlow, and each of these requires a special mode of treatment. Mr. Allingham described five varieties of whitlow. The first, which he terms phlyzacious pustule, is nothing more than an accumulation of fluid between the epidermis and true skin. Of course, all that is required is to puncture the blister and let out the fluid. In another form, a collection of pus may form under the nail, as a result of a puncture or a breaking down of blood, following a pinch, and may give rise to considerable pain of a throbbing character. In the treatment of this class of the disease, Mr. Allingham recommends the insertion of a hare-lip pin, or some such narrow-bladed instrument, beneath the nail, keeping it quite close, so as not to wound, if possible, the tissue beneath, passing it down to the collection of pus, and then depressing the needle, and then allowing the pus to flow out. This gives instant relief, and prevents the matter from burrowing beneath the nail, and so separating it from its bed. Poulticing and waiting for the pus to work itself to the surface will entail a needless amount of unnecessary suffering upon the patient. Another form of treatment, which may be employed when the collection of pus is situated at the root of the nail, is to cut away the nail from the seat of the inflammation.

Under the term cellular whitlow, Mr. Allingham describes the inflammation of the cellular tissue covering the terminal phalanx, where the bone is free from periosteum. Inflammation of this locality, by producing strangulation of the vessels, cuts off the supply of blood to the part, and as a result causes necrosis of the phalanx. Almost as soon as the first symptoms of this affection develop, as may be recognized by acute pain in the part, with the tip of the finger swollen, tender, tense, and sometimes red, a free incision should be carried directly down to the bone, and necrosis of the terminal phalanx will thus often be prevented. When cases come under observation in which necrosis of the phalanx has already taken place, deformity may be prevented, according to Mr. Allingham, by making an incision along the palmar surface of the finger, removing the necrosed bone, and placing a narrow splint on the back of the finger, allowing it to project half an inch beyond the nail. The nail should then be fastened to the splint by adhesive plaster, so as to prevent it curling

up, and it thus may act as a background on which new bone may develop.

The fourth form of whitlow described is an inflammation in the sheath of the tendons over the first or second phalanx. It may arise from inflammation spreading from without, or by a purulent inflammation of the synovial sheath of the flexor tendon. The great dangers arising from this form of whitlow are that the tendons may be destroyed, the inflammation extend into the joints, or the pus find its way into the palm of the hand. The finger in this affection soon becomes swollen and flexed, and is the seat of severe throbbing pain, the part is hot, and in the latter stages deep-seated fluctuation may be recognized. If this is allowed to progress, the whole finger may become involved, so as to present two swellings separated by a constriction corresponding to the joint.

The treatment of this affection is identical, according to Mr. Allingham, with that of periosteal whitlow, from which, in fact, the tendinous inflammation can only be recognized with very great difficulty. Mr. Allingham is strongly in favor of treating these affections by lateral incisions, for on account of the difficulty of recognition of the locality of inflammation, should the inflammation be confined to the periosteum, the central incision must be carried through the tendons to reach the bone, of course unnecessarily damaging the tendon. Mr. Allingham, therefore, recommends the lateral incision, claiming for it the following advantages :

First.—As it is difficult to tell whether the whitlow is periosteal or tendinous, by the lateral incision, if it should be periosteal, no damage is done to the tendons by cutting through them.

Second.—By lateral incision the tendons cannot prolapse from their sheaths, and therefore the liability to gangrene is diminished.

Third.—After this method of treatment the finger can be flexed, and so relax all the structures and relieve pain, whereas by the central incision the finger should be kept straight, to prevent the tendons slipping out of their sheaths ; at the same time straightening such inflamed part greatly increases the pain.

Fourth.—If the incisions are on the side they are less likely to be pressed upon, for the cicatrix may become tender, which, if in the centre of the hand, is exposed to pressure every time the hand is closed. Again, a cicatrix in the middle line may contract, and cause the finger to become permanently

flexed, whereas, if the incisions are at the side, such a result could not take place.

So much for the most recent opinions as to the surgical treatment of whitlow, a mode of procedure which is unavoidable when pus has collected.

The less severe forms of furuncular inflammation may be aborted in many cases, according to Dr. Weiss (*Medical Record*, November 27, 1886), by the inoculation of resorcin, a plan which he has employed, as follows :

A number of shallow parallel incisions about one-quarter of an inch long are made in and around the lesion and through the integument, pain being prevented by the use of a twenty per cent. solution of cocaine and ten per cent. resorcin. Lanolin salve is then applied in a very thick layer to the scarifications. The entire part is enveloped in a strip of lint, which, in turn, is to be thoroughly saturated with the salve, and over this a layer of gutta-percha tissue, absorbent cotton, and moist gauze bandage may be applied in the order mentioned.

Dr. Weiss reports a number of cases in which the employment of this mode of treatment in twenty-four hours produced complete cessation of pain and arrest of inflammation.

Of course it can hardly be expected that this mode of treatment would operate in the more serious cases of periosteal or tendinous inflammation, but it seems well worthy of trial in the less grave forms of phlegmonous inflammation.

THE ACTION OF ARSENIATE OF STRYCHNINE.

FOWLER'S solution, the most ordinarily used of all preparations of arsenic, possesses, together with undoubted advantages, a certain number of objectionable features, which have long been recognized by the practitioner.

The chief advantages of the drug consist in the ease of its resorbability and its signal tonic properties. The principal drawback connected with this useful remedy is the quickly-established habit of the drug on the part of the organism. On account of this habit the physician is naturally forced, if he wishes to continue the use of the drug, to constantly enlarge its dose until the borderline of toxic dosage has been reached. In fact, there are a number of instances recorded where this line was transgressed, and more or less severe intoxications ensued.

Employed subcutaneously, Fowler's solu-

tion is exempt from the disadvantages just stated; but, on the other hand, possesses a very inferior degree of medicinal efficiency. It is, then, with natural interest that we turn our attention to a new combination of arsenic—the arseniate of strychnine—discovered and clinically tested by Dr. J. Russel. Recent issues of *La Semaine Méd.*, *Allgemeine Med. C. Zeitung*, and *Wiener Med. Blätter* (September 9, 1886) devoted considerable space to this novel therapeutic agent.

It is claimed that the drug has given excellent remedial results, and that it acts not only as arsenic but also as strychnine. The preparation, which is soluble in water and glycerin in every proportion, is well suitable for hypodermic medication, produces no pain, and is easily absorbable.

Nevertheless, Russel recommends to use in the beginning only small doses, as a dose containing $\frac{1}{6}$ of a grain of arseniate of strychnine produces toxic symptoms when exhibited in the beginning of the treatment. The author himself employs usually a solution of 1 to 250. He begins with $\frac{1}{4}$ to $\frac{1}{2}$ of a syringe, and gradually arrives at the full syringe, containing $\frac{1}{16}$ of a grain.

Russel states that the effect of the foregoing full dose is peculiarly striking in the premonitory symptoms of the acute infectious diseases, such as malaise, depression, muscular lassitude, etc., the patient feeling revived, as it were, after a single injection. This singular effect of the drug has been so constantly observed by the author in the above conditions that he employs it systematically in all affections marked by a great reduction of vital energy.

The main importance, however, of the new remedy consists in another and entirely different feature,—i.e., in its powerful antiseptic properties, which raise the drug to an agent of the highest rank and service in typhoid fever. Such, at least, is the conviction and the claim of Dr. Russel, who, within the last four years, has repeatedly succeeded by means of this drug to either abort an incipient typhoid fever, or to simplify the morbid process when already fully developed.

The following case, reported by Dr. Russel in this connection, invites our interest. Two sisters were attacked simultaneously by typhoid fever (ileotyphus), and for various reasons one of them alone was given into his care. The doctor injected a Pravaz syringe of the arseniate of strychnine, and had the success in finding his patient after eight days reconvalescing from a light case of abortive

typhoid fever. The other sister was presented for treatment at the tenth day of sickness, when the patient had already entered the second period of the affection. Having instituted here likewise the treatment with arseniate of strychnine, the course of the affection was rendered simple, and recovery soon ensued.

It seems, then, as if the new drug is endowed with great disinfecting powers, capable of sterilizing, as it were, the soil on which the pathogenetic micro-organisms of typhoid fever vegetate.

In addition to this special indication, Russel recommends the drug also in combination with salicylate of iron in chronic anæmia and dyspepsia, and states that he has repeatedly tested the efficacy of the drug in these affections.

TREATMENT OF CHOREA.

IN a recent number of the *Medical and Surgical Reporter*, Dr. Hiram Corson emphatically calls attention to the value of *cimicifuga racemosa* in chorea of childhood. He affirms, as the result of fifty years of experience, that it is always successful in a brief time if a teaspoonful of a good fluid extract be given four times a day. This use of *cimicifuga racemosa* is a very old one, which was insisted upon by the late Dr. George B. Wood, and which, as pupils of that great master, we have long employed.

Some hundreds of cases of chorea have come under our care in the public service at the Philadelphia Hospital, and especially at the University Hospital. In the earlier years the fluid extract of *cimicifuga racemosa* was always relied upon and administered as soon as the patients presented themselves. Experience has emphatically taught us, however, that it is distinctly inferior to arsenic; so that at present every patient coming to the Dispensary with the St. Vitus' dance is put upon the arsenical treatment. In the few cases in which this fails, the next routine administration is of the fluid extract of *cimicifuga*. We can only explain the superiority which *cimicifuga* has asserted over arsenic in the hands of Dr. Corson by the supposition that the doctor has never used arsenic with sufficient freedom.

The arsenical preparation must be given in ascending doses until it produces evidences of its physiological action, and to order this requires a little boldness on the part of the physician. If, however, the patient be well

up, and it thus may act as a background on which new bone may develop.

The fourth form of whitlow described is an inflammation in the sheath of the tendons over the first or second phalanx. It may arise from inflammation spreading from without, or by a purulent inflammation of the synovial sheath of the flexor tendon. The great dangers arising from this form of whitlow are that the tendons may be destroyed, the inflammation extend into the joints, or the pus find its way into the palm of the hand. The finger in this affection soon becomes swollen and flexed, and is the seat of severe throbbing pain, the part is hot, and in the latter stages deep-seated fluctuation may be recognized. If this is allowed to progress, the whole finger may become involved, so as to present two swellings separated by a constriction corresponding to the joint.

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So much for the most recent opinions as to the surgical treatment of whitlow, a mode of procedure which is unavoidable when pus has collected.

The less severe forms of furuncular inflammation may be aborted in many cases, according to Dr. Weiss (*Medical Record*, November 27, 1886), by the inoculation of resorcin, a plan which he has employed, as follows :

A number of shallow parallel incisions about one-quarter of an inch long are made in and around the lesion and through the integument, pain being prevented by the use of a twenty per cent. solution of cocaine and ten per cent. resorcin. Lanolin salve is then applied in a very thick layer to the scarifications. The entire part is enveloped in a strip of lint, which, in turn, is to be thoroughly saturated with the salve, and over this a layer of gutta-percha tissue, absorbent cotton, and moist gauze bandage may be applied in the order mentioned.

Dr. Weiss reports a number of cases in which the employment of this mode of treatment in twenty-four hours produced complete cessation of pain and arrest of inflammation.

Of course it can hardly be expected that this mode of treatment would operate in the more serious cases of periosteal or tendinous inflammation, but it seems well worthy of trial in the less grave forms of phlegmonous inflammation.

THE ACTION OF ARSENIATE OF STRYCHNINE.

FOWLER'S solution, the most ordinarily used of all preparations of arsenic, possesses, together with undoubted advantages, a certain number of objectionable features, which have long been recognized by the practitioner.

The chief advantages of the drug consist in the ease of its resorbability and its signal tonic properties. The principal drawback connected with this useful remedy is the quickly-established habit of the drug on the part of the organism. On account of this habit the physician is naturally forced, if he wishes to continue the use of the drug, to constantly enlarge its dose until the borderline of toxic dosage has been reached. In fact, there are a number of instances recorded where this line was transgressed, and more or less severe intoxications ensued.

Employed subcutaneously, Fowler's solu-

tion is exempt from the disadvantages just stated; but, on the other hand, possesses a very inferior degree of medicinal efficiency. It is, then, with natural interest that we turn our attention to a new combination of arsenic—the arseniate of strychnine—discovered and clinically tested by Dr. J. Russel. Recent issues of *La Semaine Méd.*, *Allgemeine Med. C. Zeitung*, and *Wiener Med. Blätter* (September 9, 1886) devoted considerable space to this novel therapeutic agent.

It is claimed that the drug has given excellent remedial results, and that it acts not only as arsenic but also as strychnine. The preparation, which is soluble in water and glycerin in every proportion, is well suitable for hypodermic medication, produces no pain, and is easily absorbable.

Nevertheless, Russel recommends to use in the beginning only small doses, as a dose containing $\frac{1}{6}$ of a grain of arseniate of strychnine produces toxic symptoms when exhibited in the beginning of the treatment. The author himself employs usually a solution of 1 to 250. He begins with $\frac{1}{4}$ to $\frac{1}{2}$ of a syringe, and gradually arrives at the full syringe, containing $\frac{1}{8}$ of a grain.

Russel states that the effect of the foregoing full dose is peculiarly striking in the premonitory symptoms of the acute infectious diseases, such as malaise, depression, muscular lassitude, etc., the patient feeling revived, as it were, after a single injection. This singular effect of the drug has been so constantly observed by the author in the above conditions that he employs it systematically in all affections marked by a great reduction of vital energy.

The main importance, however, of the new remedy consists in another and entirely different feature,—i.e., in its powerful antiseptic properties, which raise the drug to an agent of the highest rank and service in typhoid fever. Such, at least, is the conviction and the claim of Dr. Russel, who, within the last four years, has repeatedly succeeded by means of this drug to either abort an incipient typhoid fever, or to simplify the morbid process when already fully developed.

The following case, reported by Dr. Russel in this connection, invites our interest. Two sisters were attacked simultaneously by typhoid fever (ileotyphus), and for various reasons one of them alone was given into his care. The doctor injected a Pravaz syringe of the arseniate of strychnine, and had the success in finding his patient after eight days reconvalescing from a light case of abortive

typhoid fever. The other sister was presented for treatment at the tenth day of sickness, when the patient had already entered the second period of the affection. Having instituted here likewise the treatment with arseniate of strychnine, the course of the affection was rendered simple, and recovery soon ensued.

It seems, then, as if the new drug is endowed with great disinfecting powers, capable of sterilizing, as it were, the soil on which the pathogenetic micro-organisms of typhoid fever vegetate.

In addition to this special indication, Russel recommends the drug also in combination with salicylate of iron in chronic anæmia and dyspepsia, and states that he has repeatedly tested the efficacy of the drug in these affections.

TREATMENT OF CHOREA.

IN a recent number of the *Medical and Surgical Reporter*, Dr. Hiram Corson emphatically calls attention to the value of *cimicifuga racemosa* in chorea of childhood. He affirms, as the result of fifty years of experience, that it is always successful in a brief time if a teaspoonful of a good fluid extract be given four times a day. This use of *cimicifuga racemosa* is a very old one, which was insisted upon by the late Dr. George B. Wood, and which, as pupils of that great master, we have long employed.

Some hundreds of cases of chorea have come under our care in the public service at the Philadelphia Hospital, and especially at the University Hospital. In the earlier years the fluid extract of *cimicifuga racemosa* was always relied upon and administered as soon as the patients presented themselves. Experience has emphatically taught us, however, that it is distinctly inferior to arsenic; so that at present every patient coming to the Dispensary with the St. Vitus' dance is put upon the arsenical treatment. In the few cases in which this fails, the next routine administration is of the fluid extract of *cimicifuga*. We can only explain the superiority which *cimicifuga* has asserted over arsenic in the hands of Dr. Corson by the supposition that the doctor has never used arsenic with sufficient freedom.

The arsenical preparation must be given in ascending doses until it produces evidences of its physiological action, and to order this requires a little boldness on the part of the physician. If, however, the patient be well

watched and the remedy be withdrawn as soon as puffiness appears in the face, no harm can be done. Cimicifuga is not an inert substance, as seems to be thought by some practitioners. Probably much of the cimicifuga that is administered has lost its activity, which appears to depend upon a volatile principle. But we have seen a teaspoonful of the good fluid extract, even in an adult, produce headache, with excessive giddiness and great prostration.

We may add that when, some years ago, the bromide of iron was highly recommended by Dr. Da Costa in the treatment of chorea, we made an extensive and thorough trial of it, and found its therapeutical action as near negative as we can well imagine. In a number of cases it simply did no good at all.

SUBSTITUTION OF DRUGS.

OUR attention has been called by a correspondent to the practice sometimes indulged in by apothecaries of substituting one substance for another in physicians' prescriptions. We do not believe that this is often done; at least we have, in many years of experience with the apothecaries in Philadelphia, never known of such an act. Of course it is unpardonable; and if we had our way, we would send to jail—solitary confinement with hard labor for a term of years—any apothecary who should do such a thing.

Knowing the weakness of human nature, we have always felt great sympathy with a druggist who suffers from having made a mistake in compounding a prescription. The most careful person is liable occasionally to slip; but substitution of one remedy for another, or one preparation for another, is a crime cold-blooded and without excuse. We are not sure that we would have any more compunction in wringing the neck of a person habitually guilty of it than the Western cowboy has in shooting an Indian or mobbing a Chinaman.

MENTHOLEATE, OR SOLUTION OF MENTHOL IN OLEIC ACID.

THERE have appeared from time to time in the THERAPEUTIC GAZETTE articles recommending solutions of menthol, and our attention has been called by correspondents to the fact that these alleged solutions are usually impossibilities. We referred the matter to Professor Joseph P. Remington, of the

Philadelphia College of Pharmacy, who has favored us with the following communication:

"The unsatisfactory character of the solutions of menthol in ordinary use led the writer to try some new solvents with the view of improvement. Alcohol, chloroform, ether, oil of peppermint, and all similar solvents have the disadvantages of too rapid evaporation, and of distributing the menthol over surfaces with which contact is not desired.

"Oleic acid was substituted, and no difficulty was experienced in making a solution as strong as seventy per cent. Now, if menthol is of any value as an external application, its usefulness is probably measured by the extent to which it is absorbed by the skin, and as oleic acid has been proved to be very readily absorbed, the *raison-d'être* of the new solution is disclosed.

"It is best prepared by placing two hundred grains of menthol in a test-tube or beaker, adding half a fluidounce of oleic acid, and heating gently until solution is effected."

THE PREVENTION OF FEVER IN A MALARIOUS COUNTRY.

IN the *Journal d'Hygiène* Schmit notices the popular belief of the inhabitants of malarious countries that cold is a powerful factor in predisposing to malarial intoxication. During the dangerous season such inhabitants always cover themselves carefully.

Popular belief lays great stress on preventive means. Science has not demonstrated a successful vaccination against malaria.

It is true that in such regions races develop which are not affected easily by malaria, but this does not save workmen, travellers, and immigrants from suffering.

Quinine the author considers too short-lived in effect to be more than a palliative means. Tommasi-Crudeli has given the subject much study, and prefers arsenic in doses of $\frac{1}{8}$ grain of arsenious acid in gelatin covering. He has employed this extensively in the worst portions of Italy and Sicily, and among railroad laborers about Rome, with the best results. The remedy is cheap, and easily taken.

In 1883, for example, in the district of Bovino, one of the localities most severely visited by fever, seventy-eight persons were divided into two groups. To one the remedy proposed was given, with the result of perfect immunity, while the remainder were affected by malaria in all grades of severity.

In 657 railroad laborers treated in 1885, 402 were completely exempted, with 119 the results were doubtful, with 136 the treatment was unsuccessful.

A popular remedy, used by the Greeks, Romans, Arabs, and at Gaudeloupe, is the liquid resulting from boiling a finely-cut lemon until the bulk of liquid has been reduced one-third; the juice is filtered, and taken cold.

THE AMERICAN BOOK.

TO the multitudinous answers which the Old World has given to the famous question of Sir Sydney Smith, "Who reads an American book?" must be added the reply of Professor Polotebnov and Dr. Breuv, of St. Petersburg, who have just translated under their supervision the work of Dr. Duhring on the skin, a book which had been previously put into French and Italian.

WE notice, as one of the signs of increasing interest in therapeutics, the formation in Boston of a Therapeutical Society, for which we wish all prosperity and success.

Reports on Therapeutic Progress.

THE MANZANILLA-TREE.

The tree known in Venezuela as the manzanilla has the reputation of causing death to those inhaling air close to it. As to whether this reputation is deserved or not has been investigated by MR. L. JACKSON, who publishes his report in the *Medical Press* for October 13, 1886. On visiting a group of manzanillas, situated on a line of railway, he found them bordering a sheltered hill within a hundred yards of the sea. They were about fourteen in number, mostly luxuriant large trees, about the size of an average full-grown British elm, and slightly resembling them in the clustering of foliage. The leaves had a little of the semitransparency of lime- or linden-leaves, the grouping of leaves rather resembling that of the chestnut, the leaves indented like the plane- or the currant-leaf; the trunk and branches well formed, bark rather smooth, but greenish, perhaps from moss.

On the whole, they were handsome and so well grouped and intact that one wished to stop and sketch them, though the stagnant

air of the place was unpleasant, apart from the risks attending its inhalation. Vegetation flourished in the neighborhood, though grass did not grow absolutely under the trees; but the absence of any mangrove thickets about there was noticeable.

The arrangements made with the agent for their removal were these: that the suitable season should be chosen, and the trees burnt down from the windward side during a favorable prevalent wind, bundles of brushwood to be rolled close with long poles and fired, the supply of which was to be large; the men employed were to have all their requirements as well as their superstitions attended to, besides to be covered and protected by leather all over, also to be provided with masks and gloves.

The agent, now dead, adhered to this proposal and carried it out. On one of the author's visits to the coast, the agent informed Mr. Jackson that almost all those trees had been burnt; about eighteen men had been engaged in it, four or five had died, almost all had been ill. Mr. Jackson saw one of them, who had come about a hundred yards for assistance, about ten days after leaving that work.

He was emaciated, and complained of pains in his limbs, which apparently were of a paralytic nature; he had also had very severe fever, and was apparently quite worn out.

After his departure, the agent said that he considered recovery hopeless in that case, as well as in all the cases of men that had been so employed throughout the undertaking, but that some of the men who had been employed only latterly and for a short time might survive the attacks, which did not at all resemble those of the local fever. He also considered that all the paraphernalia for personal protection had been entirely useless, and had imagined so from the beginning, as he had lived in Mexico and had had some previous knowledge.

The deadly influence of the manzanilla is hence no myth. It evidently produces a special paralytic fever, or combination of paralysis and fever.

There are also several other poisonous trees in the province. In one case, an estate manager, after a journey, was seized with severe pains in the head, followed by swelling of the head to a very large size, though apparently there was neither scratch nor bruise. He was treated medically, and soon recovered entirely; but the assigned cause

was simply the brushing of some branches of a tree or shrub (name unknown) against his head while riding on the journey.

The cases already mentioned cannot have been attributable to other causes. The local fevers, of which the whole of the workmen were victims, are of a depressing and virulent type, and intermittent.

The result of getting wetted in a stream or river, without subsequent rubbing dry, is sure fever of the same sort, but is specially fatal. In fact, the rivers appear to be poisonous on outward application. Damp feet from marsh-wading in Mr. Jackson's own case produced malignant eruptions; at another time he had three days' mild fever from accidentally slipping on the bank of a stream and wetting his head and arm in the fall.

OLEUM SANTALI OSTINDICUM AS AN ANTIBLENNORRHAGIC.

The *Allgemeine Medicinische Centralzeitung*, in Nos. 76 and 78, 1886, publishes a therapeutic discussion of oleum santali from the pen of DR. LETZEL, chief of the Munich Polyclinic for Skin-Diseases, which claims our notice. We condense its important features as follows:

Posner, at a meeting of the Berlin Medical Society, appears to have been the first therapist to call attention to the value of oleum santali in gonorrhœa. Letzel has exhibited the drug since 1885 to nearly one hundred patients affected with gonorrhœa, and is anxious to communicate his results to the profession. At first the oil was given in emulsion, according to the following formula:

- R Olei santali ostind., fʒiiss;
Muc. gumm. arab., q.s. ad emuls.;
Syr. cinnamomi, fʒv;
Extr. fl. coffeæ tostæ (1 to 5), fʒv;
Aque cinnamomi, fʒiv. M.

S.—Take a tablespoonful three times daily after meals.

In nearly one-half of the patients thus treated an unconquerable repugnance against this medication set in in a few days, and forced the doctor to resort to gelatin-capsules, which were readily taken and well borne. The dose of the oil, when given in capsules, was 5 drops twice or three times daily.

Of the one hundred cases treated, four showed a violent gastric or intestinal irritation, manifesting itself by copious diarrhœas or serious dyspeptic troubles. If these graver symptoms were an exception, says the author, lighter manifestations of gastric interference

were almost the rule. Annoying ructus, pressure, and burning in the stomach, and finally a great thirst were almost invariably complained of, though they did not necessitate the discontinuation of the drug. The author lays great stress upon the time of taking the drug, and regards the time intervening between the meals as the most favorable one.

Letzel calls attention to a peculiar symptom which he noted in five of the cases treated by him, viz., a more or less severe congestive pain in the region of the kidneys. In two cases this pain became so intense that morphine had to be given subcutaneously. Posner, in the discussion at the Berlin Medical Society, above referred to, strangely makes no mention of this certainly noteworthy phenomenon, while Jullien, in his "Traité Pratique des Maladies Vénériennes" (second edition, Paris, 1886, fol. 68), refers to this secondary action of the oil. Jullien also describes a peculiar erythema urticatum balsamicum which in one instance resulted from the drug. The eruption appeared on the hands, arms, back, and chest, and soon extended over the entire body surface, attacking also the mucous membranes of the tongue, conjunctiva, and pharynx. The eruption disappeared in the course of another day after a very exhausting sweating.

These observations suffice that oleum santali cannot be regarded as an innocuous remedy. Especially the appearance of congestive symptoms in the kidneys ought to cause the practitioners to use the drug with caution. Patients that are put under this treatment must be informed that when pains in the back occur the remedy must be discontinued.

J. L. Milton ("Pathology and Treatment of Gonorrhœa," fifth edition, London, 1883, p. 109) believes that the truly astounding diversity of professional opinion as to the therapeutic worth of the oil of sandal-wood in gonorrhœa is most probably ascribable to the great differences existing between the single specimens of the drug, the high price of which induces adulterations with castor-oil and balsam of copaiba.

Dr. X. Hager, in his supplement to the "Text-Book on Pharmaceutical Practice," Berlin, 1883, pp. 792-795, gives a series of tests regarding pure oil of sandal-wood.

The following comprises a summary of Letzel's experience with oil of sandal-wood in gonorrhœa:

1. At first the drug decreases considerably the gonorrhœal secretion, and changes its color from green to a milky hue. The pain conse-

quent to urination and erection diminishes, and disappears wholly in a couple of days. (Of forty-two patients treated with the oil thirty-seven were influenced in this manner, while in the seven others no influence upon the gonorrhœal process could be made out.)

2. If after ten to twelve days the medication with the oil is discontinued, the morbid symptoms reappear in an intensified manner.

3. The best results with the oil were obtained if it was not given before the third or fourth week, and if combined with weak astringent solutions (acetate or sulphocarbonate of zinc, resorcin). Three of such cases out of twenty-nine were cured in fourteen days without any injection; in twenty-one cases out of twenty-nine the secretion disappeared in eight to twelve days, the rest of the cure being accomplished with injections. The other eight cases were in indolent, degraded persons, who took not the slightest dietetic or hygienic precautions.

4. In cystitis and gonorrhœal prostatitis the oil has always proven of great value. In nine cases the drug decreased the duration of the affection and lessened the severity of the symptoms.

5. In chronic gonorrhœa the drug produced in many cases a distinct improvement, though its value in this affection is far inferior to the services it renders in acute gonorrhœa.

6. The oil is medicinally more active than oil of copaiba, though a great drawback, alongside of its high price, are the gastric and nephritic disturbances it is apt to create.

THE UNRECORDED INJURY FROM THE CONTINUED USE OF LARGE DOSES OF IRON.

There can be no doubt about the usefulness of large doses of iron in many different stages of disorders, and cases are on record in which 1 to 3 drachms, or even sometimes as much as 1½ to 2 ounces, of the tincture of iron have been given daily in erysipelas; so also ½ ounce of tincture of iron has been given daily to young children, followed by satisfactory results.

In anæmia, which is often dependent upon dyspepsia, the best and quickest way of curing both dyspepsia and anæmia is the administration of large doses of the chloride and sulphate of iron. Large doses of iron act as an immediate stimulant, rapidly removing anæmia, and removing gastro-intestinal catarrh, and renew the appetite and digestion; but if

continued for more than a week or two they cause a gastro-intestinal catarrh of their own, and if this be not attended with diarrhœa, or if a purgative be not given, serious symptoms may ensue.

DR. J. STRAHAN has had such an experience, and calls attention, in the *British Medical Journal* of September 18, 1886, to the danger of obstruction of the bowels which is apt to follow large doses of iron given for any length of time consecutively. The preparations which he has found to cause symptoms of obstruction are as follows, namely:

Ringer's pill of 5 grains of dried sulphate of iron, which equals 9 grains of the ordinary sulphate, ½-drachm and one-drachm doses of the tincture of *mistura ferri composita* P. B., made so strong as to contain 8 or 10 grains of sulphate of iron and carbonate of potassium in each dose. Any of these, if given three times, or even twice, daily, for from one to two weeks, and if natural or artificial diarrhœa do not in the mean time wash out the quantities of insoluble sulphide, will cause severe colic and constipation, which morphine and turpentine stupes seem unable even to alleviate, and which, it seems, would continue indefinitely, or till death, if not removed by a smart saline purge, or other means. Dr. Strahan has seen twenty-four hours of rhythmic agonizing pain, very like labor, with nearly constant vomiting, no sleep or ease after a grain of morphine by the mouth, the temperature rising to 101° Fahr., and great depression of all the powers of life, from a couple of weeks' course of Ringer's pill, which had done immense good to the system at large. This has not occurred once only, but dozens of times. As soon as ever a large dose of any saline—Dr. Strahan prefers an ounce of sulphate of magnesia—has well acted, all symptoms rapidly disappear. At this time, and for twenty-four hours after, the stools seemed composed half of dirty water and half of black sand. The author thinks this latter fact explains the pathology of the matter. In fact, it is a real obstruction—an acute one, too—by quantities of insoluble sulphide of iron. The quantity of this black sand, which comes away when severe constipation and colic have occurred, is surprising. It seems to be much more in quantity than the whole iron ingested, although the stools have been jet-black all along, through excreting the sulphide. So, it seems, it must lodge somewhere; perhaps in the cæcum and appendix. Then, when the iron begins to sicken the patient (gastric

catarrh), the sulphide concretes by mucus, and forms an obstruction which brings matters to a crisis. The length of time that a patient can take large doses of iron depends on the state of the bowels; if they be kept, or remain, slightly loose, he does not suffer at all; if he becomes constipated, the iron soon sickens, and the horrible pains begin; if he were to take a smart saline purge once a week, he could go on indefinitely. The saline gives the quickest relief, because it produces such a vast exosmosis of water from the intestinal wall at all points as to dissolve the mucus which binds the sand, and then washes it out. In extreme constipation, it dissolves fæcal lumps in the same way, except when the masses are enormous. It is thus the best purgative where there is a stricture in the bowels, with dilatation above, as it melts the fæces into a fluid, when they can run through the narrow part.

It is also well known to be the only safe purgative if any inflammatory lesion exist, enteritis or peritonitis. Mr. Lawson Tait takes advantage of this property of salines in his modern treatment of peritonitis ensuing on abdominal section. The principle here seems to be that of giving true and perfect physiological rest by dissolving and washing out all irritants.

Another great advantage the salines have is that they cause no pain, no griping. A teaspoonful of Epsom salts every two or three hours will put an end to many a case of fæcal obstruction in old people, and that without pain, where croton oil and drachm-doses of jalap have only given rise to unendurable pain and collapse.

It cannot, of course, be said that large doses of iron will affect every one in the way described, but in the nature of things it seems to be highly probable. There is excellent reason for the practice of giving large doses of iron. Laache, in "The Relation of Recent Researches on Blood-Corpuscles to Anæmia and Leukæmia" (*Deutsche Med. Woch.*, October 23, 1884), shows that in anæmia it may be both corpuscles and hæmoglobulin in proportionate quantity which are deficient, or, as in true chlorosis, while the red cells are diminished, the hæmoglobin is reduced out of all proportion to the loss of red cells. In fact, in the latter condition, what red cells remain are individually "chlorotic," are not red, or, at least, not red enough. Again, after bleeding, the red cells increase much more rapidly than the hæmoglobin, until, assuming it to be evenly distributed among the corpuscles, it

has sunk to seventy per cent. of the healthy standard. Now, in such cases, the value of large doses of iron is seen. According to Laache, small doses of iron chiefly stimulate the numerical increase of red cells; large doses restore both the number of cells and the amount of hæmoglobin in each. This explains the difference which most men have noticed in practice between the large and the small dose.

URETHAN.

Urethan is the subject of an interesting paper contained in *La France Médicale* (September 14, 1886).

The experiences of UGHI and VAKULOWSKY confirm the conclusions already arrived at by Jaksch, Schmiedeberg, Huchard, Riegel, and other observers, and also correspond with the researches of Eloy in the laboratory of the Bichat Hospital as to the physiological action of the drug.

Urethan, according to these observers, preserves the respiratory functions in its full activity, but lessens the rectal and axillary temperature. Frequently it produces mental excitement. In doses from 6 to 10 drachms (90 to 150 grains) the drug occasionally produces gastric irritation.

In that it does not depress the heart it has an advantage over chloral, but as a pure hypnotic it is not so reliable (*Ann. di Chim. e di Farmacol.*, April, 1886). Vakulowsky prescribed urethan in delirium tremens, rheumatic pains, sleeplessness (cause not stated), and in gastralgia due to carcinoma. In none of these cases did he find it comparable with chloral. On the contrary, he found it to produce gastric troubles in three patients, headache, rigidity of the muscles, and finally a marked weakening of the heart impulse and frequency. These cases, says the editor (*Russkain Meditsina*, No. 14, p. 252), do not invalidate the claims of urethan, but they show the extreme variability of hypnotics.

THE USE OF BORACIC ACID WITH VAGINAL TAMPONS.

In the treatment of the various pelvic troubles where the use of tampons is indicated, one of the disadvantages has been the development of an extremely offensive odor, unpleasant to the physician and distressing to the patient, ordinarily occurring after a retention of the cotton for more than forty-eight hours. Occasions arise when it is inconvenient for the patient to return every two or

three days, and it then becomes a matter of importance to adopt some means which will prevent the usual decomposition and allow her to retain the tampon for a longer period.

To secure this end a number of expedients have been tried, of which DR. HARRIS A. SLOCUM (*Medical News*, October 23, 1886) especially recommends the use of boracic acid. From the first trial it has served the desired purpose effectually, and has given decided and striking results. Cases having profuse and offensive leucorrhœa among the Russians, Poles, and negroes of the Philadelphia Dispensary service have been subjected to this treatment, with the unvarying result of entirely preventing the occurrence of the usual unpleasant odor. In several instances the menses have appeared while the tampons were *in situ*, and have in each case saturated the cotton, which upon removal was found as free from smell as when introduced.

Following is a short description of the mode of application: While using Sims's speculum in either the genupectoral or lateral position, the vagina is cleansed with a piece of wet absorbent cotton held in a pair of uterus forceps, partly withdrawing the speculum to allow of access to the posterior wall. The membrane is then partly dried with a fresh piece of cotton, and several scruples of boracic acid introduced on a spatula, and distributed over the area with a wisp of cotton, or by the aid of the forefinger. The slight moisture permits the powder to adhere, forming a moderately thick coating over the entire wall. In an ointment-jar or other convenient receptacle is placed about an ounce of the acid, and each piece of cotton held in the forceps is thoroughly rubbed in it before insertion.

Great care is always necessary in the introduction of tampons, even when they remain but twenty-four hours, to prevent undue pressure upon the rectum or urethra. When they are to remain in position a week or longer, greater attention than ever must be paid to these points, on account of the tendency of the cotton to pack, through absorption of moisture and continuous pressure.

Comparing boracic acid with other agents, Dr. Slocum has not found one which so completely fulfils its office without offering objectionable features of its own. With very free or unpleasant discharges a proportionately larger amount of powder must be used.

Whether it affects the vaginal tissues advantageously or otherwise the writer is not prepared at present to say, though he has frequently noticed after its use, and when

that which remained from the old packing had been removed with a piece of wet cotton, that the vagina was much paler than when the tampon was introduced. If by repeated trials this observation can be proved correct and constant, it may reasonably form the basis for a series of experiments in the treatment of vaginitis. That the paleness just mentioned is not entirely due to the mere pressure of the cotton seems evident from the fact that simple cotton tampons are frequently tinged with blood on their surface, although carefully placed and not tightly packed.

Oakum tampons seem particularly apt to irritate the membrane, and cause oozing after forty-eight hours' retention. So decided is this tendency to cause bleeding, that when a case presented where it was desired to use oakum, it was not introduced until a layer of cotton had been placed against the vaginal wall to protect it from the harsh and irritating fibres.

Cotton saturated with boroglyceride is an effectual antiseptic, but will not serve the purpose here. Glycerin produces a copious watery discharge, which, though at times beneficial, is not always desirable, and is ill adapted for long retention, inasmuch as it is diluted and partly removed by the watery discharge it causes.

NEW INVESTIGATIONS ON CHOLERA.

TIZZONI and CANTANI send to the *Centralblatt für Medizinischen Wissenschaften* (October, 1886) the valuable results of their observations and researches made during the recent epidemic of cholera at Bologna. The following theses represent their principal conclusions:

1. The nature of the disease was established by bacterioscopic and microscopic examinations.

2. The comma-bacilli obtained in a pure culture from the excrements and the intestinal contents of cholera patients presented all biological and morphological characteristics described by Koch and Van Ermenghem.

3. In twenty-four cases of cholera which were investigated the comma-bacilli could be demonstrated in each instance, either by microscopic researches or (in case the microbes were but few in number) by bacteriological procedures.

4. The bacillus was seen not only in the more or less acute form of cholera (twenty cases), but also in the prodromal diarrhœa (one case) and in choleric typhoid fever (three

cases). In the latter affection the bacillus was obtained as late as six, seven, and fifteen days after the beginning of the infection.

5. These observations testify to the signal value of bacteriological and microscopic researches for the diagnosis and prognosis of Asiatic cholera.

PEROXIDE OF HYDROGEN IN DISEASES OF THE EYE.

Much has recently been written in regard to the use of the peroxide of hydrogen in cases of purulent inflammation of the middle ear. Led by these statements, Dr. J. H. CLAIBORNE (*New York Med. Journal*, September 11, 1886) instituted a number of experiments in cases of catarrhal inflammation of the conjunctiva.

On the instillation of two drops of a ten per cent. solution into the conjunctival sac in chronic catarrh, the following was observed :

The patient invariably started as the drops fell into the eye ; that portion of the conjunctiva which was bathed in the drops became blanched and presented a "washed-out" appearance in from half a minute to one minute after instillation ; this condition lasted at least five minutes ; immediately after introduction the bulbar conjunctival vessels became constricted ; this condition yielded to marked distention in a few minutes ; bubbles rose to the surface of the fluid, and some remained clinging to the bottom and sides of the sac ; twenty to twenty-five minutes after the instillation the eyes presented an irritated appearance, the bulbar vessels remaining still distended and the palpebral conjunctiva equally as red if not redder than before.

The patients complained irregularly of stinging immediately after the introduction, which lasted on an average from one minute to a minute and a quarter. Twenty to twenty-five minutes after the first instillation they invariably stated that their eyes felt better and more comfortable.

In acute cases the same was observed, save that the bulbar vessels became immediately distended after the instillation without apparently becoming smaller in half an hour. No exact difference can be drawn between the effect of a ten and a five per cent. solution, nor between these and a one per cent. solution, save that with the latter the stinging is less and usually lasts only half a minute.

Instillations were made also directly upon the cornea ; there was no change in its appearance ; the stinging was no greater, and

no local anæsthesia occurred under half an hour's observation ; there was no effect upon the pupil. The instillations were made every third day at the clinic. .

The patients were instructed to use no other form of treatment ; they invariably returned with the eyes in a less inflamed condition.

Encouraged by the ultimate result, Dr. Claiborne was bold enough to prescribe a five per cent. solution for one patient with acute follicular conjunctivitis, and to direct him to put two drops into each eye morning and night. He returned on the third day with the eyes much worse. He complained of severe stinging on the introduction of the drops, which, however, soon passed away.

The bulbar vessels were intensely congested and did not yield entirely to several drops of a four per cent. solution of cocaine.

In the light of the foregoing observations, the author does not feel justified in advising the using of the peroxide of hydrogen in eye-diseases, and, although no alarming reaction followed its use in any case, he gladly relegates to others its employment in the eye.

URETHAN AN ANTIDOTE TO STRYCHNINE, RESORCIN, AND PICROTOXINE.

PROF. ANREP has experimentally proven that urethan possesses properties antagonistic to convulsion-producing agents, such as strychnine, resorcin, and picrotoxine, and consequently claims that urethan could be utilized in intoxications caused by the named drugs. The efficacy of urethan rivals in this respect that of hydrate of chloral, but is far less dangerous, as it can, even in large doses, be given with perfect safety. Anrep concludes that in man 2 to 3 drachms of urethan would be required in order to counteract the intoxications with any of the foregoing drugs.—*Pharmac. Post*, October 23, 1886.

CODEINE IN DIABETES.

Notwithstanding the number of papers which have been published as to the value of codeine in the treatment of diabetes, this remedy appears to have made but little progress in the estimation of the profession at large. In the *Australasian Med. Gazette* (May, 1886) Dr. ALFRED A. LENDON reports rather scanty notes of two cases of diabetes, one of which seemed to be a case of pure polyuria, in which the administration

of codeine, in doses of $\frac{1}{4}$ grain, produced immediate relief, decreasing the number of times in which micturition took place and the quantity of urine passed. The other was a case of diabetes mellitus, in a woman 85 years of age, in whom, after restriction in diet had failed to give any benefit, codeine in $\frac{1}{2}$ -grain doses was administered thrice daily, and the quantity gradually increased until she took four grains a day. After six weeks of this treatment, according to Dr. Lendon's notes, she was no better, but rather worse. The thirst was insatiable and the dryness of the mucous membrane of the mouth so great that she was unable to stick a stamp on a letter. The codeine was therefore left off for a time, and after a week resumed at her urgent request, as she fancied that she missed its narcotic effects. It was then given in 3-grain doses at night, and soon increased to 5 at night and to 1 grain in the morning, with marked results, the sugar becoming much less than before, only a trace remaining. The mouth and pharynx became moist and the skin moist instead of harsh and dry. The thirst was no longer a source of complaint, and at night she rested well. She died at the commencement of the hot weather from an attack of acute diarrhoea.

While these notes are quite meagre, they seem to show that codeine possesses a certain amount of influence in preventing the formation of sugar in diabetes mellitus and in controlling the quantity of urine secreted in diabetes insipidus. The results obtained at Dr. Lendon's hands, taken together with the claims made for codeine by Drs. Pavy and Shingleton Smith, show that codeine as a remedy in diabetes is well worthy of further study.

THE ANTAGONISM BETWEEN STRYCHNINE AND COCAINE.

DR. BIGNON (of Lima) communicates to the *Bulletin Général de Thérapeutique* (October 30, 1886) the following results of his experiments on dogs, made in order to define the alleged antagonism between strychnine and cocaine:

1. Cocaine is a physiological antagonist to strychnine.
2. A dog having ingested about $\frac{1}{10}$ grain of strychnine per pound of bodily weight can always be saved by hypodermic injections of cocaine.
3. This experiment succeeds even after the first tetanic paroxysm has set in.
4. Only if too large doses of strychnine

have been ingested the dog perishes from the correspondingly large doses of cocaine required.

THE HYPODERMIC USE OF SPIRITS OF TURPENTINE IN MALIGNANT TUMORS AND OTHER STRUCTURAL DEGENERATIONS.

We have already referred in a previous issue to the favorable results obtained through the hypodermic injection of turpentine in malignant tumors, in the hands of several European surgeons. DR. J. MCF. GASTON reports in the *Southern California Practitioner* for September, 1886, his experience with the injection of undiluted spirits of turpentine in a case of nodular induration and ulceration of tissues that had resisted all the ordinary modes of procedure in such affections. The disease had commenced about five years before, with a thickening and induration of a nodular form, involving all the elements which make up the skin, and, to some extent, the subcutaneous cellular tissue of the lower third of the affected leg. When it was first brought to his attention it did not extend entirely around the leg, and there were only a few points in which ulceration had occurred. But ultimately the tissues became involved throughout an area that could not be covered by two large hands embracing this part of the leg, and broke down into irregular cavernous excavations, interspersed with nodular masses, having an ichorous exudation from the ulcerated apertures that studded the entire surface. The boundary above and below the affected tissue presented a serrated outline, with the structure of the skin unchanged beyond this border-line, and the general nutrition of the body remained apparently unimproved. It may be mentioned that the other leg was amputated below the knee a number of years ago on account of an injury, and that the stump presents nothing worthy of comment.

While nothing definite can be inferred in this case, owing to the interruption of the treatment, there are some points of interest connected with the use of the hypodermic injection of the spirits of turpentine which warrant a reprint of the facts.

An ordinary hypodermic syringe being filled with spirits of turpentine, the point was thrust into the affected tissues and the contents forced into the diseased part. Most intense suffering followed this application, and Dr. McGaston proceeded to inject into the sound structure elsewhere a solution of $\frac{1}{4}$

grain of sulph. morph. and $\frac{1}{16}$ grain of atropine, giving also internally alcoholic stimulants freely. The contortions of the features and the spasmodic respiration resembled the disturbances from an attack of angina pectoris, while the acceleration of the pulse, with marked diminution of its force, indicated serious interference with the vital powers of the patient. In the course of an hour the constitutional trouble passed, and there was slight febrile excitement afterwards. The local irritation and inflammation was controlled by poultices of flaxseed-meal for two or three days, and ultimately disintegration of the deep structures ensued, with a filling up by healthy granulations in this vicinity.

After several weeks another application was preceded by an injection of morphine and atropine. The patient still gave indications of much pain, and seemed to require the repetition of the whiskey in liberal doses. Again the influence upon the new zone of tissue, permeated by the spirits of turpentine, underwent such a modification as to encourage a continuation of the injections.

On the third occasion, however, a four per cent. solution of cocaine was first injected into the part selected for operation. Allowing the needle to remain *in situ*, while the body of the syringe was removed and filled with turpentine, this was now injected without complaint for the time being. But after a half-hour had elapsed the patient began to complain of local pains, which continued for some hours, and caused the refusal of the patient to submit to any further treatment.

SUPERALIMENTATION.

DUJARDIN-BEAUMETZ has made certain deductions from his study of obesity which bear directly upon the question of fattening.

He defines a properly fattening diet as comprising nitrogeneous, starchy, and fatty elements, with an abundance of fluid. Such a regimen may be used as a definite mode of treatment in all conditions of general depression, and also in phthisis.

It must be used under the three conditions which the study of animals has shown necessary to fatten,—namely, consideration of the peculiarities of race, “stalling” (a limited exercise), and a special selection of foods. These conditions are, of course, modified in their application to the human subject.

Practically, as many obese persons eat too little, so many emaciated patients eat too

much. There are cases which cannot be successfully treated through some constitutional peculiarity.

The author speaks of *forced feeding*, as with the insane, and feeding by other than the natural channel, as in cases of stomach intolerance of food.—*Journal d'Hygiène*, November 25, 1886.

THE EFFECTS OF AN OVERDOSE OF COCAINE.

DR. W. E. RAMSDEN WOOD records in the *Australasian Medical Gazette* for August, 1886, the account of a patient in whom an overdose of cocaine produced some alarming symptoms of poisoning. The case was that of a man in whom an injection of three drops of a ten per cent. solution of cocaine was administered to reduce the pain of neuralgia from a diseased tooth, since chloroform was counterindicated on account of heart-disease, and ether proved so exciting that its use had to be abandoned. The next day, the pain being very severe, he sent to his chemist for a similar solution, and had three minims injected, but without the desired effect; he returned to the chemist to make it stronger, which he did, making it twenty per cent. On visiting Dr. Wood, he again received four minims of the twenty per cent. solution, and within five minutes he became restless and inclined to vomit, and then began to feel the sensation of pins and needles in the left hand and arm, which rapidly extended to the right side. This was speedily followed by contraction and rigidity of the fingers, arms, and legs. There was also a tendency to opisthotonos. His pulse became extremely rapid and feeble, his face livid, and the muscles of his mouth and cheek strongly contracted. His respirations were short and convulsive; his hands and feet became cold, and a profuse perspiration broke out on his head and face. Half a tumbler of brandy was administered, followed at short intervals by drachm doses of aromatic spirits of ammonia, and a mustard-plaster was applied over the cardiac region and friction was used upon the upper and lower extremities. At the same time he was made to inhale a few drops of chloroform to check the spasmodic contractions. After continuing these frictions for over an hour he improved somewhat, and the rigidity of the muscles lessened, but returned as soon as friction was stopped. At the end of two hours he improved more rapidly, but felt somewhat

drowsy, and it was not until about four or five hours that all the symptoms had subsided.

THE PHARMACEUTICAL USES OF SACCHARIN.

There seems to be good reason for believing that saccharin has no injurious physiological action when taken internally.

Sir Henry Roscoe has stated that large quantities have been given to dogs, and one dog had as much fed to him daily as was equivalent in sweetening power to a pound of sugar, and did him no harm. Up to the present time it has not been known to produce any injurious effect upon the system, and will therefore probably be more employed in pharmacy. MR. C. J. S. THOMSON, of Manchester, publishes in the *Pharmaceutical Journal* for October 23, 1886, the following notes of some rough experiments made with a view of ascertaining how far the new sweetening principle (saccharin) may be of use in this way. He finds that one per cent. solution of saccharin in hot water, although very sweet to the taste, has a flavor distinctly different from that of cane-sugar. Ninety minims of this solution added to one containing four grains of sulphate of quinine quite masked the bitter taste of the alkaloid and rendered it palatable.

Thirty minims of the same solution sweetened half a drachm of tincture of iron, and it required twenty minims to cover the salty taste of ten grains of bromide of potassium.

BICHLORIDE OF MERCURY IN DIPHTHERIA.

During an epidemic among the population near the Gulf of Finland, where diphtheria has long been extremely fatal, the following treatment, in the hands of DR. VERNER, was very successful.

For young children he dissolved $\frac{1}{4}$ grain of bichloride in 5 ounces of water; for older children, $\frac{1}{3}$ grain in 7 ounces of water; for adults, $\frac{3}{4}$ grain in 16 ounces of water.

These quantities are to be taken by the different patients in from twenty to twenty-four hours, in convenient doses and at convenient intervals. Milk diet only is allowed. Antipyrin is the antipyretic used, and inunctions of ichthyol are ordered three or four times daily. Antipyretics are given in enemata, and the digestion is as carefully conserved as possible.

The author's only bad results in seventeen cases were two, in which scarlatina was a complication.—*Le Nouveaux Remèdes*, No. 19, 1886.

THE MOVEMENTS OF THE HEART AND INTESTINES, ILLUSTRATED BY PHOTOGRAPHY.

At a recent meeting of the New York Academy of Medicine (*N. Y. Med. Journ.*, November 13, 1886), DR. WILLIAM GILMAN THOMPSON exhibited photographs of the normal pulsating heart at the various periods of the pulsation in rabbits, kittens, lizards, pigeons, etc. He also exhibited photographs exhibiting modifications in the movements of the heart consequent upon the administration of various stimuli. In this way he was able to give graphical illustrations of the effects of drugs upon the heart. He had at first employed an ordinary camera, but, as only one plate could be used at a time, he had constructed an apparatus by which he could take six views of the object within a second. The shape of the heart varied very considerably in different animals, but in general the longitudinal diameter exceeded the transverse by about one-fourth in full diastole. The modifications in the form of the heart depended chiefly upon the thick-walled left ventricle. In the open chest the movements of the heart were greatly exaggerated by artificial respiration; if artificial respiration was not maintained the movements might be diminished.

The most important of his later observations were as follows: 1. The base of the heart descended very little, if at all, in systole in most animals. A prominent exception to this rule was seen in the frog. 2. There was much discussion among physiologists as to whether the long diameter was shortened to any appreciable extent in passing from full diastole to full systole. The photographs showed much variation in this matter, and we could hardly judge from what took place in animals as to what took place in the human subject. In most animals there was a slight shortening, but in pigeons there was slight elongation. The transverse diameter was shortened usually twice as much as the longitudinal diameter in full systole. The average shortening of this diameter amounted to from one-quarter to one-third. It was uniform from base to apex, unless interfered with by drugs. The antero-posterior diameter was uniformly elongated by about one-eighth. In a given heart this

diameter was elongated about half as much as the transverse diameter was shortened during systole. 3. The apex, when the pericardium was removed, in birds and mammals, was uniformly tilted forward, upward, and to the right, and the rotary movement of the heart from left to right on its long axis occurred in the excised heart as well as in the heart *in situ*; in other words, it occurred when the base of the heart was free, without vessels to offer resistance to it. 4. The right ventricle lay so much higher, and it was so much thinner-walled than the left, that it exerted much less influence on the shape of the heart during its movements, especially at the apex. The author inferred from his experiments that the cardiac impulse against the chest-wall might be due to the stroke of the apex, and perhaps also partly to the stroke of the anterior and hardened ventricular wall just above the apex.

The apex, as well as the whole contour of the heart, was greatly modified by drugs. Drugs which had the primary effect of increasing the systolic force tended to make the apex sharper, whereas drugs of which the action was to lengthen the diastole, tended to make the apex blunt and round. If antagonistic drugs were given, the whole contour of the heart became more rounded than was natural. The surface of the heart in all its normal changes in size between full diastole and full systole was smooth, but stimulants caused it to become more or less irregular. When the heart was deprived of its blood by hemorrhage, the thick left ventricle retained its shape pretty well, but if the heart was held up, the right ventricle would be seen to pouch out below. The apparent greater vitality of the right side of the heart was observed in the feeble efforts to beat after the left ventricle had ceased its movements. The auricles in systole were uniformly contracted to a slight degree. The independence of the auricles and ventricles of each other in contraction was shown by the photographs. The auricular systole overlapped the ventricular systole in point of time. The extent of movement of the heart as a whole bore no definite relation to its size, but depended altogether upon the amount of work being done. The heart, being removed from its attachments and emptied, filled itself by suction when placed in fluid, and assumed a rounded form. It had been a question whether the coronary arteries were filled during systole, or whether they were closed during systole by the cusps of the valves. If the latter was the case, these

arteries must be filled during ventricular diastole by the elastic recoil of the aorta. The very great prominence of the vessels in the photographs showed that the blood-flow was impeded and dammed back in the superficial vessels by the pressure of the strongly-contracted ventricles. If now, as had been shown by experiments, the coronary arteries were divided during systole, the blood would spurt with some force. The conclusion arrived at by Dr. Thompson was that the coronary arteries were filled by the recoil of blood during diastole, and perhaps also to some extent during systole. By dividing the longitudinal and spiral muscular fibres the contraction of the circular fibres was shown to be uniform and symmetrical. The papillary fibres were shown to stand out towards the centre of the heart and to have independent contractile power. Of the various cardiac stimulants which he had employed, heat produced the strongest systole, and was most uniform in its effect. With aconite he paralyzed the right ventricle, while the left retained its power to contract. Glonoin appeared to be the most powerful chemical cardiac stimulant. Chloral caused marked diastole.

Dr. Thompson had also been successful in photographing the movements of the intestines, bladder, and diaphragm. Scratching the large intestine caused it to contract in ridges, which did not extend far from the point of irritation. The effect of the contraction was to shorten and draw up the entire loop. It was a disputed point as to whether the peristaltic wave passed normally in the reverse direction from the anus up. He had photographed peristaltic waves passing simultaneously in opposite directions; also the pendulum movement of the intestine. Pricking the intestine caused a stricture-like form of contraction.

DR. A. H. SMITH asked whether it was not probable that a systolic murmur was sometimes mistaken for a presystolic one, the observer dating the commencement of the systole from the stroke of the heart against the chest-wall.

DR. THOMPSON did not doubt that systole began before the stroke of the heart against the chest-wall, and consequently such an error in diagnosis might occur.

LIQUOR FERRI ALBUMINATI.

DR. GEMPT has used this solution, originally introduced by Biel, of St. Petersburg, as fol-

lows: in doses of $\frac{1}{2}$ to 1 dessertspoonful, three times daily, in milk; to children, from 5 to 30 drops. Constipation is remedied by Carlsbad salts, taken after the morning dose. This preparation mixes well with milk, containing one-half of one per cent. of oxide of iron.

It is recommended especially in gastric ulcer, and given very recently in hemorrhage. The author gives the following formula for a preparation which will not coagulate milk:

Dried egg albumen, \mathfrak{z} i;
Aqueæ dest. (cold), \mathfrak{z} vi.

Add to the following solution, and shake well:

Liq. ferri sesquichlor., \mathfrak{D} viii;
Cinnamon water, \mathfrak{z} iss;
Glycerin, \mathfrak{z} iss.

Filter. The liquor should be clear, reddish-brown, and contain five per cent. of oxide of iron. Specific gravity, 1.06. Mixed with an equal value of saturated solution of sodium chloride, the albuminate of iron is completely separated. The filtrate should give only a weak reaction for iron.—*Zeitschrift des Österreich. Apotheker-Vereins*, November 10, 1886.

UNALTERABLE ALKALOID SOLUTIONS.

Solutions of cocaine, as those of morphine, atropine, and some other alkaloids, when made with simple distilled water, rapidly become spoiled through the growth of a fungus. DR. ABBOTT (*Medical Press*, October 13, 1886) recommends a solution in camphor-water. He has kept solutions of atropine to which camphor (one grain to the ounce) was added for over a year, and has not seen any micro-organisms develop. The salicylate of these alkaloids has been demonstrated by Mr. Tichborne, of Dublin, to be free from the objection referred to by Dr. Abbott. Their solutions are non-irritant and free from fungoid growths.

CANNABIS INDICA AND BELLADONNA IN WHOOPING-COUGH.

The following formula has been a favorite one with VETLESEN:

\mathcal{R} Ext. cannabis indicæ, grs. xv;
Ext. belladonnæ, grs. viiss;
Alcohol absolute,
Glycerin, aa \mathfrak{z} iss.

In the following doses: Children aged from 8 months to 1 year, 4 to 5 drops; 1 year to

2 years, 5 to 8 drops; 2 years to 4 years, 8 to 12 drops; 4 years to 8 years, 10 to 13 drops; 8 years to 12 years, 12 to 15 drops; over 12 years, 15 to 20 drops.

116 cases were treated, of which 83 did well; of these, 30 made most brilliant recoveries. No evil after-effects were observed in any case.—*Pharmaceutische Centralhalle*, November 11, 1886.

CHLORAL HYDRATE AS A VESICANT.

Attention has quite recently been called to the fact that, for blistering purposes, chloral hydrate is fully as efficacious as cantharides, while it is free from the inconveniences attending the employment of this latter agent. The chloral should be reduced to a powder, and a layer of it placed on a piece of common adhesive plaster, taking care to leave a margin between the edge of the layer of chloral and that of the plaster. This is then warmed over a gas-jet until the chloral becomes discolored and melts, when it should be immediately applied on the spot for the operation, the skin covering which is to be anointed beforehand with olive oil or lard. The anæsthetic properties of the chloral prevent any unpleasant sensation, and fifteen minutes is the maximum period of time during which the application may be continued. If the above-mentioned precaution be taken of anointing the skin, its vitality is retained, and the presence of an open wound is avoided, the skin adhering again as soon as the exudation is evacuated. Another advantage consists in the absence of the risk of poisonous effects consequent on absorption, a by no means uncommon sequel to the use of cantharides.—*Medical Press*, October 13, 1886.

TREATMENT BY INTESTINAL INJECTIONS OF GAS.

CORNIL and CLAUDE BERNARD have drawn the attention of the French Academy to the fact that gases given by rectal injection pass into the lungs and are expired. Carbonic acid gas may be used as a vehicle, and impregnated with medicinal agents.

Bergeon, of Lyons, has given sulphurous acid gas for a chronic bronchitis with most happy results. Chanteron has treated asthmatic and phthisical patients by this method with sulpho-carbonated gas with a direct benefit to respiration; the effect followed half an hour after injection.

In the phthisical a rapid gain in weight occurred. Bergeon recommends 8 to 10 pints of carbonic acid, and from 7 to 10 ounces of sulphur, containing material to be injected slowly into the rectum twice in twenty-four hours.—*Wiener Medizinische Blätter*, November 11, 1886.

THE CAUSES OF THE POISONOUS EFFECTS OF CHLORIC SALTS.

STOKVIS (in Amsterdam) has studied the phenomena produced by large doses of chlorates, and his conclusions are of especial interest in the light of the reported accidents, especially in practice among children, which have occurred with these drugs.

The commonly received explanation for the toxic effects has been twofold, especially with potassium chlorate: first, the local action of its liberated acid radical, and, second, when taken in large doses and entering the blood, through oxidation of the hæmoglobin to methæmoglobin. Stokvis and Von Mering gave animals large doses of chlorates other than potassium to eliminate the influence of that metal. Almost the given amounts appeared in the urine, while there was also an appearance of salts of a lower acid radical. Experiments with potassium salts also showed that salts undergo a reduction in the organism. The reduction of the chlorates, however, was not effected by fibrin, blood-serum, sugar, pus, or the excretions of the body, while these constituents were themselves free from decomposition. Especially was this true of blood and urine.

Jäderholms, Marchand, Mering, and Stokvis have shown that the oxidation of the blood from hæmoglobin to methæmoglobin does not occur without the decomposition of the blood, their studies of blood temperature and other phenomena causing them to consider the process essentially a fermentation. These investigators consider it very doubtful if such oxidation can occur in circulating blood. Injections—intravascular and subcutaneous—of chlorates do not result in the finding of methæmoglobin in the blood in the living animal. In blood drawn from the animal, evidences of the presence of these substances were not wanting. After the administration of large doses to dogs hæmoglobinuria and methæmoglobinuria were only observed when an overpowering intoxication followed. With rabbits, however, both these phenomena occurred, but with evidences of hemorrhage and engorgement of the kidney

parenchyma, and the decomposition of such extravasated blood would readily account for methæmoglobin in the urine. We see, then, how all salts, when circulating in a given concentration, can produce derangement in the relative composition of the body fluids, the decomposition of these fluids, local engorgements, injury to the tissues, and finally the changes which the presence of fermentation makes possible. The author considers not potassium chlorate alone, but all salts, and especially all the potassium salts, capable of such action.

AN IMPROVED TROCAR FOR PARACENTESIS OF THE ABDOMEN.

The frequent obstruction of the canula by the intestine or omentum in the operation of tapping, which generally occurs when about a pint of fluid has been withdrawn, renders the improvement in the form of canula suggested by Dr. JOHN S. MILLER (*Annals of Surgery*, November, 1886) of considerable value, especially since the various manœuvres usually resorted to, such as endeavoring to float away the obstruction by changing the patient's position, or the dangerous plan of introducing a probe through the canula, are generally without success.

The device which Dr. Miller employs is to introduce a smaller and longer canula into that already in position, in case there is an obstruction to the flow. The canula is blunt, and provided with two long fenestræ. In the latter are springs which expand and push away the obstruction on emerging from the original canula, and which are so solidly soldered as to offer no danger of breaking off in the abdominal cavity.

In reply to the query whether or not the gut may be incarcerated and wounded by the springs, Dr. Miller states that in several operations no such accident occurred, when all efforts in bringing about such a complication upon the recent cadaver were unsuccessful.

THE EFFECT OF LARGE DOSES OF COCAINE UPON THE CENTRAL NERVOUS SYSTEM.

DR. BEY, of Cairo, has had the following experience in the use of cocaine as a means of checking the opium-habit. He began with doses of 5 centigrammes, three or four times daily, but the patient's sensations of relief and stimulation were so pleasurable that the patient soon established a cocaine-habit. He sought relief for each slight ailment in an

injection of cocaine, the dose increasing until $\frac{1}{2}$ a gramme, and even $\frac{1}{8}$ of a gramme, was taken secretly daily. This produced loss of appetite, great irritability, ringing in the ears, and, from time to time, dyspnoea and hallucinations of sight and hearing. These unpleasant symptoms the patient had learned to relieve by injections of morphine until he became skilled in the antagonistic use of the drugs. An attack of herpes and its neuralgic pains drove him to double his doses of cocaine until for two or three days he took a gramme, and at times $1\frac{1}{2}$ grammes daily. Then followed a condition very like delirium tremens,—tremors, lack of muscular tonicity, incontinence of urine, alterations in the nails of the fingers and toes, the greatest agitation, severe hallucinations of sight, hearing, and smell, injected conjunctivæ, a staring expression. He fired a pistol at imaginary objects, attacked his servant, and was finally placed under hospital restraint. Here he soon recovered under morphine injections of 5 centigrammes, three times daily.

RARE LESIONS PRODUCED BY BROMIDE OF POTASSIUM.

At a recent meeting of the New York Pathological Society (*N. Y. Med. Journ.*, November 13, 1886) Dr. R. W. AMIDON presented an epileptic young woman, who had been under his care four years, taking moderate doses of bromide of potassium,—perhaps never more than 4 or 5 drachms a day. A little over a year ago she discontinued it, but recently he learned that she had been taking during the past eighteen months a mixture of the bromides amounting to 6 drachms a day. She then returned to him, and he found the ordinary acne on the face, which, although usually confined to the face and neck, perhaps occasionally reaching to the chest and shoulders, had in this patient, as in two others whom he had seen, invaded the legs, and assumed almost the pustular form. The lesion began in the ordinary way, but became indurated with rather a large base, and ran a chronic course, breaking down and forming what appeared to be a small ulcer. Vesicles, with contents which tended to become cloudy and purulent, formed in rings about the acne spot. After a time the centre of the spot took on a reparative process, and entirely healed, while the pathological changes at the periphery spread, and the vesicles became purulent, dried up, and formed a brownish scab. A section of one of these spots showed

that there had not been a true ulcer, but that the skin had simply been denuded of the cuticle, leaving the papillæ intact. He had in no case seen the true skin indurated. The disease did not seem to depend particularly upon the amount of the bromides given. The only treatment which he had seen do good was the thorough application of the actual cautery.

NEW HÆMOSTATICS.

BONAFoux recommends the following powder, whose use in the human subject and in experiments on animals has resulted in the prompt checking of bleeding, and the rapid obliteration of the vessel afterwards:

Colophonium,
Gum-arabic,
Charcoal, in equal parts.

Dr. SPARK has used in his operations about the mouth and throat chloroform and water, in proportion of two to one hundred.

As a simple gargle, especially after the removal of tonsils, it has been very satisfactory. As a hæmostatic douche, it acts promptly, and does not impede the work of the operator.—*Pharmaceutische Post*, October 30, 1886.

NOTE ON THE TREATMENT OF THREAD-WORMS IN CHILDREN.

The complete cure of thread-worms in children is often very difficult. While the ordinary methods used, such as rectal injections of salt and water, infusion of quassia, and other remedies, do good for a time, yet they often fail to relieve the attendant symptoms of "worms," symptoms usually very irregular, and in some cases severe, in character. In many cases, though the irritation about the anus is relieved by injections, the irregularity of the bowels and the disturbance of sleep remain the same. This is probably due to the fact that the habitat of the worms is higher up in the large intestine, where no remedy introduced by the rectum can reach them.

In many cases Dr. SIDNEY MARTIN (*Practitioner*, October, 1886) claims to have found that rhubarb in small doses brings away large numbers of worms, and at the same time regulates the bowels, so that the use of injections may in most cases be dispensed with. The formula which he has found most useful is as follows, varying slightly with the age of the child:

R Tincturæ rhei, ℥iij;
Magnesii carbonatis, gr. iij;
Tincturæ Zingiberis, ℥i;
Aquam, ad ℥i.

This is to be taken twice or three times daily, according to the effect on the bowels. Whether the rhubarb acts as a vermicide, or simply by "moving the worms on," the writer is unable to say.

INFLUENCE OF DRUGS GIVEN TO NURSES OR MOTHERS ON THEIR SUCKLING INFANTS.

We abstract from *Les Nouveaux Remèdes* of August 1, 1886, the following interesting discussion of DR. FEHLING relating to the influence of certain drugs given to nurses on their suckling babies.

1. *Salicylate of Sodium*.—Dose varying between 30 and 45 grains. Whenever the child is put to the breast one hour or less after the administration of the drug, the salicylate of sodium can be found in the child's urine. After the expiration of twenty-four hours no traces of it can be found in the urine. Likewise the salt cannot be recovered if the child is put to the breast very soon after the exhibition of the drug. The elimination of the drug terminates simultaneously in nurse and child.

2. *Iodide of Potassium*.—The same results are obtainable. The milk, if analyzed, gives the characteristic reaction. In the child the elimination lasts seventy-two hours; in the nurse forty-four hours.

3. *Ferrocyanide of Potassium*.—The reaction is very distinct in the urine of the nurse, but wholly absent in the child's urine.

4. *Iodoform*.—After prolonged application of iodoform upon wounds of the vagina or vulva, iodine can be recovered from the milk and urine of the nurse, but never from the child's urine.

5. *Mercury*.—The transmission of mercury from the nurse to the mother is very slight and inconstant.

6. The influence of the nurse's diet on the child is illusory; nurses can with impunity eat sour articles (lemons, vinegar) without thereby influencing the child.

7. *Narcotics*.—(a) Tincture of opium in 20- to 25-drop doses. Thornhill claims to have observed a prolongation of the sleep in infants, while Fehling saw neither prolongation of sleep nor constipation resulting from it. (b) Hydrochlorate of morphine. The drug given in medicinal doses does not influence the child. (c) Chloral. Dose 15 to 45 grains.

Average length of sleep produced in nurse, two hours. No effects on the child are observable if it is strong and vigorous. If the child is weak and possibly born before the full term, it is advisable to wait two hours after administration of the drug to the nurse before allowing it to suckle. (a) Sulphate of atropine. Injected in the usual doses hypodermically in the nurse, the drug produces very distinct physiological effects in the child. The dilatation of the pupils taking place in the child does not disappear before twenty-four hours. Hence minute doses of the drug exclusively are permissible.

MILK AS A PROPHYLACTIC AGAINST RENAL ALBUMINURIA IN PATIENTS WITH SCARLATINA.

MUSATTI has combined milk diet and cold baths in scarlatina, with the best results both in mitigating the severity of the fever and in preventing the nephritis which so often occurs. He employs milk from the beginning of the disease, and he has not seen the evil effects of cold bathing in causing renal congestion and irritation, of which others have spoken. With due care against shock and collapse, he would repeat the cold application every two hours if needed. Jaccoud is quoted as supporting the author's use of milk.

HYDRASTIS CANADENSIS NOT AN OXY- TOCIC IN THE HUMAN SUBJECT.

SCHATZ has reviewed the experiments of Fellner upon animals, and has observed the effects of the drug upon human beings, without finding the markedly oxytocic effects seen in animals. The peristalsis of the genital tract seen in animals Schatz considers due to the strongly-contracted blood-vessels, and not to muscular stimulation. The peculiar property of the hydrastis to contract the uterine blood-vessels, but not its muscle, makes its use indicated in the following cases: in uterine hemorrhage from myomata; in an eccentrically hypertrophied uterus, which, when emptied of its contents, relaxes, and bleeding recurs; in hyperæmia of the genitalia, where ergot does not result in contraction, and intermittent pains and relaxation increase the hyperæmia; in acute or chronic pyosalpinx, where it is desirable to contract the tube to lessen hyperæmia; in chronic peritonitis and oöphoritis. Hydrastis does not derange digestion as digitalis does.—*Medicinisch-Chirurgische Rundschau*, November 15, 1886.

METHYLAL.

Attention has been called by SIGNOR PERSONALI (*Nouv. Rem.*, October 15, p. 459), of the Pharmacological Institute of Turin, to the possible value as an anæsthetic and hypnotic of methylal, a compound which was first obtained nearly half a century ago, but has hitherto remained without application. Methylal is represented by Roscoe and Schorlemmer ("Hist. Carb. Comp.," p. 195) as having probably the constitution $\text{CH}_2(\text{OCH}_3)_2$. It is prepared by distilling methyl alcohol with an oxidizing mixture of manganese dioxide and sulphuric acid, and treating the distillate with potash lye to separate methyl formate, which passes over with the methylal. The methylal is a very mobile, volatile, colorless liquid, sp. gr. 0.3551, boiling at 42°C ., and slightly reddening litmus-paper. It has an odor recalling those of chloroform and acetic ether, and a burning aromatic taste, but produces a sensation of cold when placed on the skin. When injected subcutaneously into dogs in the proportion of 0.10 to 0.15 per cent. of their weight it quickly produced anæsthesia, followed by a deep sleep, in which reflex action was suspended. Rabbits were not quite so susceptible. Recovery was rapid in consequence of the rapid elimination of the methylal, which did not appear to leave any disagreeable after-effects. It augmented slightly the heart-beats, lowered slightly the blood-pressure, and caused the respiration to become slower and deeper. Signor Personali has found methylal also to be an antidote to strychnine, a small quantity being sufficient to suspend the tetanic spasms. In the human subject it is said to relieve nervous pains of the stomach when administered as a draught, and in the form of an ointment or liniment to constitute an excellent anæsthetic. Several formulæ are given, among which are a liniment (oil of almonds, 35 grammes; methylal, 15 gr.), an ointment (lard, 30 gr.; wax, 3 gr.; methylal, 5 gr.), a "potion" (syrup of red currants, 40 gr.; methylal, 1 gr.; water, 110 gr.), and a syrup (methylal, 1.5 gr.; simple syrup, 100 gr.).—*The Pharmaceutical Journal and Transactions*, October 30, 1886.

THE PHYSIOLOGICAL ACTION OF ACETOPHENONE.

DR. MAGNIAN denies the hypnotic effects which others have ascribed to this drug.

The author gave an animal a toxic dose, with the following effects: lessening of ar-

terial tension, acceleration of pulse and respiration, which became slow as the stage of intoxication became advanced.

No great alterations were observed in the gases of the blood; the amount of oxygen especially is not lessened, while the amount of urea excreted is greatly lessened.—*Revue de Médecine*, November 10, 1886.

USES OF HYOSCYAMINE.

An interesting discussion took place before the meeting of the New York Neurological Society on October 5, which we reproduce as reported by the *New York Medical Journal* of November 13, 1886:

The president, DR. C. L. DANA, stated that there were two preparations of the drug, the crystalline and the amorphous. The former seemed to be similar in property to the opiates, while the latter seemed to have neurotic properties. He had heard that hyoscyamine was employed in the asylums for the insane in New York, but not very successfully; whereas in the asylums of Pennsylvania its success had been marked. He had employed hyoscyamine in paralysis agitans, in chorea, and in a few cases as a hypnotic, and it had been employed as a hypnotic to a considerable extent in his service at Bellevue Hospital. The number of cases of chorea in which he had used it was six; in three it was noted to have been of benefit, or to have caused very rapid or very marked improvement. One of the cases was marked, and had not yielded to other treatment. In three cases the results were very doubtful. He had employed it in four cases of paralysis agitans,—in two, he thought, with unquestionable benefit. In two it seemed to produce no benefit. On the whole, he thought that, unless given at rather an early stage of paralysis agitans, it did no good. The form employed in chorea and paralysis agitans was the crystalline, but he was not sure that the amorphous form would not be the better preparation in such cases. He thought we could get along perhaps as well without as with hyoscyamine.

DR. B. SACHS's experience with hyoscyamine had not been very extensive, but he had employed it in a few cases of paralysis agitans, acute mania, and the insomnia accompanying the neurasthenic condition. He had employed only the crystalline form. In contradistinction to what the president had said, that it was best to give it in the early stage of

paralysis agitans, he remembered one case in which every other therapeutic agent had been tried without success, when hyoscyamine was administered in about $\frac{1}{100}$ of a grain dosed twice a day, with the effect of making the patient very much more comfortable, and of diminishing somewhat the annoying movements of the hand. In another chronic case it had been of no benefit. He had obtained no effect from the drug in allaying the excitement of acute mania. It had also been disappointing in insomnia accompanying neurasthenia. It seemed to be of more value against insomnia from mental restlessness.

DR. W. M. LESZYNSKY said that about eight years ago it was quite fashionable to use hyoscyamine in asylum practice, and he had employed it in chronic mania, acute mania, and epileptic forms of insanity. First he used the amorphous form, and afterwards the sulphate. It had been said that the latter form was easier absorbed, and produced its effects in smaller doses. The sulphate was also preferred for hypodermic use, in which manner he had employed it in $\frac{1}{80}$ of a grain doses. To patients with recurring attacks of maniacal symptoms the drug was given a few days before an expected attack, and continued until the attack was aborted. In a state of exhaustion he would regard hyoscyamine as a dangerous drug to administer; but where there was no objection to its use on that ground, he had known it to produce sleep where chloral and morphine had failed. Given to patients subject to epileptoid convulsions before menstruation, it had seemed to avert the attack. He had given it in small doses in two or three cases of chorea, and thought it produced some benefit.

DR. GRAY had been using hyoscyamine ever since it had been introduced to the profession, and he must say that for certain purposes there was no drug that he could not better afford to dispense with. The most convenient form was in tablets, $\frac{1}{100}$ of a grain each. In some people hyoscyamine would produce seemingly serious retention of urine. It might also produce disastrous results if given to persons whose general strength was below par. In an old gentleman with atheromatous arteries, hypertrophied and feeble heart, $\frac{1}{100}$ of a grain had caused a condition of collapse. He knew of one patient suffering with melancholia whose death had been hastened by it. He had given it in two cases of chorea, one being an exceedingly violent case. The child finally died in a convulsion. To that patient he could never give a

second dose of hyoscyamine, because of the alarming prostration which a first dose would cause. In another case, in which the child had to be held in bed, the drug proved an effective means of restraint, but the child was always found prostrated to a marked degree the next day. In paralysis agitans it had been very useful, and its use had come to be with him a routine treatment. He thought the reason why it had been of more benefit in his practice was that he combined with it some stimulant or tonic to prevent its depressing effect. He gave with it good food, 1 or 2 grains of quinine a day, and sometimes alcoholic stimulants. He had satisfied himself that it was the hyoscyamine in this treatment which had a restraining effect upon the movements in paralysis agitans. But it was especially in cases of mental trouble that hyoscyamine was of great benefit. In insanity with hallucinatory symptoms, especially in the early stage before the patient could be taken to an asylum, hyoscyamine would do much towards restraining him, and, it would seem, aided in cutting short the disease. He was very careful to give no more of the drug than was absolutely necessary, and he combined it with bromide of potassium, which increased its effect. He had never seen a hypnotic effect from hyoscyamine.

DR. THOMSON'S experience with hyoscyamine, almost from the beginning, had rather prejudiced him against it. One of the first cases in which he had employed it was that of a judge troubled with insomnia. The next day he was unable to hold court, and had bladder symptoms, etc. He had found it useful in asthma with considerable dilatation of the right side of the heart, without bronchitis, but a congested state of the lungs. He had employed it in facial neuralgia, headaches, and various neurasthenic conditions, but had nothing definite to say about its effects. One patient with paralysis agitans was benefited by it among many with whom it was a failure.

DR. KELLOGG had used hyoscyamine in cases of mental excitement. It had not proved the sedative he had supposed it would, but it controlled muscular excitement. He had failed to get any hypnotic effect from it. He had not been favorably impressed with its after-effect in acute mania.

DR. H. S. HINKLEY had found it serviceable in allaying maniacal excitement.

DR. RICHARDS had given from 5 to 7 drops of a one per cent. solution in several cases of insomnia, without effect.

THE INFLUENCE OF FLUIDS UPON THE TEMPERATURE OF FEVER PATIENTS.

GLAX has observed, in long clinical experience, that the consumption of abundant fluids by fever patients is followed by a rise of temperature. A retention of fluids follows their ingestion, and the lessened vascular tone and the slow capillary circulation result in a free oxidation of individual cell-elements. This occasions a rise in temperature, which ends as the fluids find exit through the kidneys.—*Medicinisch-Chirurgische Rundschau*, December 1, 1886.

THE TREATMENT OF VARICOSE VEINS BY INJECTIONS OF CARBOLIC ACID.

SURGEON-MAJOR W. F. STEVENSON states in the *Lancet* (October 23, 1886) that in the last two years and a half he has treated eight cases of varicose vein, some of considerable severity, by the injection of carbolic acid, as recommended by Mr. Cheyne, with the most desirable results, and with no ill effect whatever.

The treatment consists in the injection of one minim of pure carbolic acid at different situations into the enlarged veins, having previously cut off the circulation from the limb by means of an elastic bandage placed above the highest point of puncture. For the latter purpose the tube of an Esmarch's apparatus is best, but a Martin's bandage or two or three yards of elastic webbing will do excellently. Before operating the patient should be directed to stand erect or to sit on the edge of his bed, with his heels on the floor, for about two minutes, in order to allow the veins to become distended. The Esmarch tube should then be passed around the thigh one and a half times, sufficiently tight to stop the superficial venous circulation, and a little time (about a minute) given for the vessels to become well filled below it, the remainder of the tube being then applied so as to cut off all circulation from the limb. Injections of pure carbolic acid, 1 minim each, are then made into the veins at about one inch and a half apart, as many as may be required for each case. A little pledget of absorbent carbolized cotton-wool is placed over each puncture as the needle is withdrawn, and well soaked with collodion. This is allowed to remain until in the course of time it falls off, when healing will usually be found completed. The elastic bandage cutting off the blood-supply should not be removed in less than fifteen minutes after the last injection has

been made, and great care should then be taken not to remove it suddenly. The circulation should only be permitted to return by very slow degrees. For at least a week after the operation the patient should not assume the erect position, or put his foot to the ground for any purpose whatever. The pain is very slight; besides that of the pricks of the needle, a burning sensation is felt at the seat of each puncture, lasting for ten minutes or less, and even this is not severe. Certainly no anæsthetic is required. Care should be taken that the subcutaneous injection syringe and needle are "surgically clean," and to insure this they should have been placed in a 1 in 20 carbolic lotion for about twelve hours previously to use. The author has done as many as eighteen injections in one case, and it seems advisable to begin with the injection next to the elastic bandage; that is, the one highest on the limb. Getting the point of the needle well into the vein is not quite so easy a matter as might at first appear; attempts to do so at right angles to it frequently fail, and the injection is thus made into the surrounding tissue. The best plan is to fix the skin over the vessel by means of the left thumb, close below the point selected for puncture, and to direct the needle through the skin and coats of the vein in the long axis of the latter. Mr. Stevenson thinks that in his cases somewhere about ten per cent. of the punctures caused suppuration, a little abscess about the size of a pea forming where this occurred; but this process, as the result of the caustic action of carbolic acid, was curiously slow and almost absolutely painless. Three of his cases were done to remove the cause of varicose ulcers of the leg, which had been healed over and over again by rest in bed and different means of local treatment, but which had broken out afresh on the patient's commencing to get about again.

PATHOLOGY AND THERAPY OF FEVERS.

PROF. FINKLER considers that by our studies of the nervous system, by the large number of agents which depress temperature, and from our knowledge of infection we are able to form a reasonable hypothesis regarding the phenomena known as fever. It is proven that the heat-producing and regulating mechanism of the body is at fault; and he considers that the three stages of the fever's development are especially instructive, as throwing light on its subsequent course.

The writer believes that Pflüger's labora-

tory researches have shown that fever is a neurosis, a paralysis of the centre which governs temperature. The phenomena of fever are dependent upon temperature; these phenomena form a useful reaction against the effects of a toxic agent. He observes that antifebrile treatment by baths must be given with reference to the laws governing the nervous mechanism of heat, and when so given is of the greatest value.

Drugs which directly influence fever exist, but have few grounds of decided worth.

Combined treatment by baths and specifics he considers the most efficient.—*Medicisch-Chirurgische Rundschau*, December 1, 1886.

A NEW OPERATION FOR HYPOSPADIAS.

MR. T. N. FITZGERALD states in the *Australian Medical Journal* for September 15, 1886, that after having tried most of the feasible and recognized operations for the relief of hypospadias, the results in most cases being disappointing, he conceived the idea that if a subcutaneous opening could be made to simulate in size and shape as nearly as possible the natural urethra, the instrument not to crush but divide the structures, and this opening kept patulous with some smooth, unabsorbent material, success might be possible. Accordingly, he has carried out this plan in two instances, and in both with perfect success, and he reports tolerable full notes of one of these cases.

This was a child aged 8 years, in whom at first the sex was not easily discernible. Both testicles were high up in the canals at the interior rings and the scrotum flattened out. The diminutive penis was drawn down upon the perineum, and the rudimentary corpora cavernosa difficult to be distinguished. The urethral opening was close to the scrotum, making this a case of peno-scrotal hypospadias. Having carefully examined the case, Mr. Fitzgerald decided to free the penis by a careful dissection, and then attempted to form the urethra, raising the glans and making a free transverse incision, as recommended by Duplay. The strong fibrous bands which existed under the corpora cavernosa and curving round them were freely divided. After a little troublesome dissection the body of the diminutive organ was raised up and the lozenge incision brought together laterally by horse-hair sutures. A wire stage was erected on the pubis, the little penis transfixed by a hare-lip pin, and fixed in position with fine silver wire. The case did remarkably well,

and in about six weeks was discharged with instructions to return in six months to undergo the second operation, namely, the forming of a new urethra.

On his second return, after nearly a year, chloroform having again been administered, he was placed in the lithotomy position and the second part of the operation completed. The distance from the end of the penis to the urethral orifice was about two inches. The organ was put on the stretch in the vertical position, and a long, sharp tenotome introduced in a slight indentation where the urethral orifice in the normal state ought to have been, and gently pushed downwards and backwards to a site a little behind and to the side of the hypospadias opening. The channel thus made a vertical slit simulating the normal urethra as much as possible.

A previously-prepared glass rod, about the size of a number six English bougie, well oiled, was then passed down the newly-made canal, and allowed to project just below and to the side of the lower opening. The penis was held upwards, and the glass rod fixed in position by the aid of a wire stage erected on the pelvis. The case after operation did very well. The urine ultimately being passed out of the artificial urethra, which became lined with mucous membrane, and the slight fistula which remained at the site of the hypospadias opening being readily cured by paring the edges and inserting a suture. Mr. Fitzgerald states that the boy is now perfectly well, and able to void all his water in a good stream by the new passage.

THALLIN IN DISEASES OF CHILDREN.

STEFFEN writes in praise of thallin in fevers in children because of its ready solubility in water, its freedom from disagreeable taste, its prompt effect, and lack of ill after-effect. A depression of temperature occurs an hour after taking, and persists three or four hours. The doses range from $\frac{3}{4}$ of a grain to 2 grains, and rarely need be repeated more often than twice in twenty-four hours.

The fall of temperature ranges from a degree and a half to four; this is dependent not only upon the patient's peculiarities, but varies with different hyperpyrexias. In typhoid fever and in lung-diseases the greatest effect is observed; in scarlatina, measles, and diphtheria the result is least apparent. In rare cases only, when the temperature rises rapidly a second time, a decided chill and cyanosis, but without collapse, have followed

the reduction of temperature by thallin.—*Medicinisch-Chirurgische Rundschau*, December 1, 1886.

MEDICATION OF NERVES.

DR. J. LEONARD CORNING recommends for the treatment of nervous affections, in the *New York Medical Monthly* for November, 1886, the method which he described some time ago, of prolonging the anæsthesia produced by hypodermic injections of cocaine through the suspension of the circulation in the part. He reports three cases of sciatica in which he injected 100 minims of a one-half per cent. solution of cocaine at the more painful points along the course of the nerve, and immediately thereafter applied a tourniquet in such wise as to interrupt the circulation in the crural above the point of injection. During the first five or ten minutes after this injection little relief was experienced, and after a lapse of twenty minutes the pain had sensibly diminished and in half an hour had entirely disappeared. After the removal of the tourniquet pain did not return until the following day, and the mode of treatment was repeated for three weeks, the periods of freedom from pain becoming longer and longer until the pain finally totally disappeared; and now, four months after the last injection, there has been no return of the pain.

PHENYLHYDRACIN A SUGAR-TEST IN URINALYSIS.

DR. VON JAKSCH, assistant to Prof. Nothnagel in Vienna, employs this substance as follows: Twice as much of the powdered chemical as will lie on a knife-point and four times the quantity of sodium acetate are added to half a test-tube of water which is slightly warmed; an equal volume of the suspected fluid is added, and the mixture heated for twenty minutes in a water-bath, after which it is placed in cold water. If a large amount of grape-sugar be present a yellow crystalline precipitate will form, which on microscopic examination is seen to be composed of needles of yellowish color, alone or in bundles. With large amounts of sugar this precipitate becomes macroscopic.

If no precipitate but a cloudiness results, the liquid is put in a conical glass and again examined, when a few crystals denote a trace of sugar, amorphous yellow matter meaning nothing.

This test is especially useful in cases of

poisoning from coal-gas, etc.; also after deep chloroform narcosis and the taking of a large amount of salicylic acid, and in transudates and exudates in the abdomen or thorax.

The author's experience would recommend phenylhydracin most highly as a clinical reagent.—*Deutsche Medicinal Zeitung*, November 8, 1886.

SACCHARIN.

The alleged antifermentative property of saccharin has been the subject of a comprehensive series of experiments by MESSRS. ADUCCO and MOSO (*Chem. Zeit.*, October 10, p. 218). It was found that in the proportion of 0.16 per cent. saccharin distinctively and persistently diminished the activity of beer yeast at a temperature both of 16° and 30° C. In a mixture of equal parts of 0.32 per cent. saccharin solution and urine, kept at a temperature of 16° to 17° C., ammoniacal fermentation had not commenced at the end of seven days, while a mixture containing the same proportion of salicylic acid had broken down. A saccharin solution retarded the lactic acid fermentation in milk, and the action of a preparation of pancreas was also considerably slackened by it. Added to a pepsin solution in the proportion of 0.16 to 0.32 per cent. saccharin retarded the peptonizing of coagulated albumen, though without stopping it, but upon reduction of the saccharin to 0.0064 per cent. the gastric juice was then scarcely affected. Comparative experiments showed benzoic acid to be equally powerful in this respect, and salicylic acid a little more so. In the proportion of 0.16 to 0.32 per cent. in acid and neutral solutions saccharin proved capable of affecting the amylolytic action of saliva, the effect being least in the neutral solutions. Salicylic acid proved rather more powerful in similar solutions, and boric acid had about the same effect as saccharin. Professor Salkowsky also reports results that are perfectly in accord with the foregoing (*Chem. Zeit.*, October 10, p. 218). He states that the antiseptic property of saccharin is due to an acid action, and is greatly diminished upon neutralizing with sodium carbonate.—*Pharmaceutical Journal and Transactions*, October 30, 1886.

THE TREATMENT OF CHRONIC DIARRHŒA BY SULPHOCARBONATED WATER.

DR. DE CHAMPEAUX reports in *Bull. Gén. de Thérapeutique*, November 15, 1886, two cases

in patients greatly enfeebled by exposure at sea and in the tropics where foeculent, chronic diarrhoea was cured by this agent.

It was given in doses of from 20 to 60 grammes (f3v to xv) in milk during the twenty-four hours, and as an adjuvant to tonic and astringent drugs.

Its use must be patiently continued, and the results are obtained only after prolonged use.

Its mode of action is explained by Dujardin-Beaumetz as being disinfectant, destroying micro-organisms and neutralizing ptomaines, and thus removing the irritating causes which keep up the intestinal lesion. It may be prepared in the following formula :

Bisulphide of carbon, ʒvi¼ ;
Water, Oi ;
Essence of mint, 30 drops.

Place in a flask containing three pints. Shake thoroughly.

THE TREATMENT OF INTUSSUSCEPTION BY INFLATION AND MASSAGE.

DR. B. W. CHEAVLE reports in the *London Lancet* for October 23, 1886, three successive cases of intussusception, occurring in children, successfully treated in this way. The method which he employed in these three cases was to inject air into the rectum by means of Higginson's syringe, at the same time kneading the abdomen externally. It was found that at least three assistants were required to carry on this operation satisfactorily : one to work the syringe, one to press the anus to prevent the escape of air, and the third to manipulate the abdomen. His experience in these three cases has been that the tumor will disappear after some minutes, and should it return, may be again removed by a repetition of this procedure, and the escape of the air subsequently has in all his cases been followed by a natural passage from the bowels. Where great pain existed, or where much struggling was caused by the mode of treatment, Dr. Cheavle employed chloroform, and in one case administered one drop of laudanum.

PHYSIOLOGICAL TREATMENT OF CHOLERA.

PROF. SEMNOLA believes that we have as yet no means of destroying the cholera bacillus in the organism, and also that the heroic treatment of the premonitory, or algid stage, is extremely dangerous. He, therefore, advises a mode of treatment which he describes as physiological.

This treatment consists in absolute rest of the whole organism, and especially the digestive organs, from the time of the first manifestation of diarrhoea.

In six thousand cases at Naples in a late epidemic, it was observed that the giving of a few teaspoonfuls of bouillon after the first attack was sufficient to cause a severe relapse. Nourishment when taken should be in the form of milk.

The preservation of bodily strength the author thinks most important, and seeks to accomplish this by warm baths. Given in the first stage of cholera they relieve visceral congestion, promote elimination through the skin, and exercise a tonic influence on the nervous system. After the bath the patient is wrapped in woollens, and given warm, aromatic, and alcoholic drinks.

Opium in small doses is the only drug the author considers useful.—*Medicinisch-Chirurgische Rundschau*, No. 20, 1886.

BORACIC ACID AS A LOCAL ANTISEPTIC.

DR. A. C. EWING states in the *American Practitioner and News* for November 13, 1886, that he has recently used boracic acid in the treatment of a deep suppurating wound in the palm of the left hand, which had been inflicted two weeks previously, and was now suppurating tolerably profusely. The patient's hand was in a semiflexed position from the involuntary contractions of the tendons and fascia, and was the seat of extremely acute pain. He employed about 30 grains of powdered boracic acid, dissolved in a half-ounce of water, and applied on a pad of absorbent lint. The patient reported that this application entirely freed him from pain, and the wound could be freely manipulated without causing the patient any suffering. Dr. Ewing states that he is still using the same dressing, applied once daily, on account of its excellent antiseptic qualities, and that the wound is healing rapidly by granulations, and that the necessary manipulations required to overcome the stiffness of the tendons and fascia could be employed without causing the patient pain.

THE ACTION OF SOLANINE.

This substance, discovered in 1821 in France, is obtained from potato-shoots and also from the parings of very young or very old potatoes. It becomes glucose when treated by some of the acids, and this change

is thought to occur in the organism under the influence of gastric juice.

With acids it forms salts.

Although known for many years, it has been neglected by therapeutists.

DR. GENENIL has given it in doses from $\frac{3}{4}$ of a grain to 5 grains three or four times daily. He commonly orders 3 grains in grain-doses. He does not hesitate to give 6 or 8 grains daily, if needed. It may be given in capsules or hypodermically, also upon a denuded surface or by inunction with fats. The author considers solanine a narcotic to the medulla, spinal cord, and nerve-trunks, and paralyzant to the terminal ends of motor and sensory nerves.

It may be given without danger in large doses; it does not have cumulative effects; it has none of the inconvenient after-effects of morphine or atropine.

It does not produce cerebral congestion, and so may be given to the aged and to children; its use is indicated wherever we have to combat excitement, spasm, and pain. The author's best results were obtained in the treatment of sciatica.—*Bulletin Général de Thérapeutique*, vol. iii.

IODINE IRRITATION.

The external application of the tincture of iodine made with a badly-rectified spirit, containing acetone, may be followed by great irritation of the epidermis, or even vesication, and similar results may occur when a preparation of good quality is used on a susceptible patient. M. CARLES points out that the irritation may be removed immediately by the application of alkalis and alkaline salts, dilute ammonia or soda crystals being permissible where the epidermis is robust, as on the hands, whilst alkaline sulphites, bisulphites, or hyposulphites are preferable for more delicate skin. But the best agent, in M. Carles's opinion, is sodium sulphydrate, an aqueous solution containing from one to ten per cent., according to circumstances, giving relief in a few minutes. It may also be used for removing iodine stains.—*Pharmaceutical Journal and Transactions*, October 30, 1886.

THE ALKALOID OF THE TULIP.

GERARD has isolated from the garden tulip the body tulipine, which is furnished by all portions of the plant. Its chemical and physiological properties are allied to colchicine,

scillitine, and veratrine; it forms with acids crystalline salts. Its formula is not yet known.

$1\frac{1}{2}$ grains is a fatal dose for a cat, death occurring from cardiac paralysis.

In medicinal doses of $\frac{1}{12}$ and $\frac{1}{8}$ of a grain it increases the secretion of saliva, and is diuretic and laxative.

Its effects upon the brain and spinal cord resemble those of colchicine and veratrine, the latter of which is a poison to the nervous system, while the former affects principally the heart and digestive tract.

DR. NICOT has found the action of tulipine to resemble not only that of veratrine and colchicine, but also that of strychnine.—*Les Nouveaux Remèdes*, November 24, 1886.

TREATMENT OF TYPHOID CONDITIONS BY BENZOIC AND SALICYLIC ACIDS.

According to the Paris correspondent of the *British Medical Journal* (October 23, 1886), at a recent meeting of the Société Médicale des Hôpitaux, M. ALBERT ROBIN proposed a new method of treating typhoid conditions in which the organism is always overcharged with the incompletely oxidized residues of nutrition. These residues were eliminated with difficulty, owing to the fact that they are but slightly soluble in the fluids of the human body. There were certain pharmaceutical substances which combine with the nitrogenous residues of the human organism, and rendered them more soluble, and this facilitated their elimination. The principal agents which acted in this way were benzoic and salicylic acids, which, after combining with nitrogenous substances such as glyocol, passed into the urine as salicyluric and hippuric acids. M. Robin, in his first experiment, studied the physiological action of benzoic acid on combustible substances. He administered benzoic acid to persons in good health, whom he had previously dieted for a few days. Under the influence of this treatment the solid constituents of urine slightly decreased, and there was also a smaller proportion of urea, consequently its relative proportion to solid matter was lower. These results could not be attributed to a moderating action of benzoic acid on combustion, but to the action of the acid in carrying away into the urine part of the combustible substances. On another occasion M. Robin administered benzoic acid to five patients with typhoid fever, in whose urine he noticed an increase in the weight of urea and solid matter. Salicylic acid and

salts gave the same results, as also did substances such as toluene, zylene, toluic acid, ethyl, and propylbenzine, which, in passing through the system, become transformed into benzoic acid.

TREATMENT OF ANAL FISSURE.

DR. CREQUY proposes to treat this affection by introducing within the fissure a fragment of lint soaked in a solution of chloral, 1 to 50. This application is made after the morning stool, and is expelled on the following day, when the bowels move. Its action as a stimulant to granulations and a local antiseptic has been most happy.—*Les Nouveaux Remèdes*, November 24, 1886.

SUBMUCOUS INJECTION OF LACTIC ACID FOR THE CURE OF THE EARLY STAGE OF LARYNGEAL PHTHISIS.

At a recent meeting of the Medico-Chirurgical Society of Montreal (*Medical News*, November 13, 1886), DR. GEORGE W. MAJOR, in a short paper, related his experience of lactic acid as a local application in the ulcerative stage of laryngeal phthisis. He said that it was probably the most speedy and most efficacious plan of treatment yet introduced. Ulcerations healed under it most kindly, and tuberculous deposits underwent absorption more rapidly than by any other means. But it was of lactic acid employed as a submucous injection into the substance of the laryngeal tissues that he wished to speak. In the early swellings and œdemata it had rendered very remarkable results in Dr. Krause's (Berlin) hands. Dr. Major had the privilege, during the past summer, of seeing many of Dr. Krause's cases, and he was happy to be able to endorse all that had been maintained by Dr. Theodore Herring, of Warsaw, and Dr. Krause in its favor when used as an injection. Dr. Major employed a twenty to thirty per cent. solution of the remedy, and inserted at one sitting from fifteen to twenty minims of the liquid. Very trifling pain followed, and but little after-irritation was induced. The swellings disappeared in periods varying from twenty to thirty days, and ulcerative changes were avoided. A case undergoing treatment by injection was exhibited to the members of the society, and the result was deemed very satisfactory and encouraging. Dr. Herring's syringe, as modified by Krause, was the instrument employed for the injections. Alto-

gether, Dr. Major regarded the lactic acid treatment of laryngeal tuberculosis as the greatest advance yet made in the treatment of this disease, and looked forward to a great future for it.

TURPENTINE IN CHRONIC DISEASES OF THE RESPIRATORY ORGANS IN CHILDREN.

DR. DESCRAIZILLES describes several cases where the diagnosis lay between chronic bronchitis and tuberculous infiltration, with the physical signs of cavities, in which turpentine produced very beneficial results.

In the *Revue Mensuelle des Maladies de l'Enfance* the author describes the preparation which he uses as a solution in alcohol or water of turpentine which is "hydrated,"—has been long exposed to the air. He commonly used the following formula:

Turpentine, grs. xxx;
Alcohol, f3x;
Water, f3v.

A quantity not exceeding 9 grains of the solid daily gave excellent effects. In omitting alcohol from the solution at least 6½ ounces of water will be required to 15 grains of the solid, and it is then advisable to add an astringent syrup. Such solutions are best given at meals.

The effects were the rapid lessening of foul expectoration and a tonic influence upon digestion.

ŒDEMA OF THE PREPUCE.

DR. J. G. TAPPER writes to the *New York Medical Journal* for November 6, 1886, that for several years past he has been treating very successfully the great œdema and infiltration attending many cases of phimosis and paraphimosis as the result of congenital or specific causes. In many cases occurring in the adult we find a perfect horror of being confined to the bed. In fact, unpleasant circumstances connected with the trouble render it imperative that our patient should engage in his usual occupation during the treatment. These requirements have led him to the adoption of the following measures: He saturates a given quantity of absorbent cotton with chemically pure glycerin in which bichloride of mercury has been dissolved in proportions varying from 1 in 1000 to 1 in 5000, according to the amount of fœtor present; or, in place of the bichloride, iodoform, carbolic acid, or any antiseptic agent preferred

may be used. With the cotton so charged he completely encircles the organ so far as it is involved. Over this a large rubber condom is drawn, which is then suspended from an abdominal band. This dressing is to be repeated every six hours until the oedematous condition disappears. At that time a beginning pallor will be observed, and often in from twelve to twenty hours the prepuce will have become very pale and shrivelled. The great majority of cases yield promptly, and no further progress is observed after the first application. If ulcers are present, it will often be discovered that they have taken on a healthy action before it has been possible to expose them, and not infrequently this progresses until the cure is completed. The advantages of this dressing are: It is cleanly; there is no difficulty in applying it, patients frequently continuing the treatment at their rooms or places of business after the first dressing; it does not expose or confine the patient; and the results in his hands and in those of others who have tried it at his suggestion, have been very satisfactory.

THE INFLUENCE OF COCAINE UPON THE SKIN.

HERZOG has reported (in the *Münchener Med. Wochenschrift*, No. 13) that pencilling the intact skin with ten and twenty per cent. solution of cocaine has no effect whatever. He therefore employs the galvanic current, as recommended by Wagner, and uses as anode an electrode constructed by Stintzing, in which the fluid—the cocaine solution—serves directly to conduct the current. This anode is generally placed upon the forearm, and an ordinary electrode taken in the hand of the opposite side. Galvanic current and cocaine together produce anæsthesia. To increase this the strength of both agents must be increased together. A gain in intensity is, however, no gain in duration. This method has no result upon deeper tissues.

Upon a thinned or denuded skin the ordinary injections and applications are useful, especially to painful excrescences. Urticaria was cured by a ten per cent. solution.

Cocaine is a vigorous agent in rendering the skin anæmic.

TREATMENT OF SUBSTANTIVE EMPHYSEMA.

DR. FRANCIS DELAFIELD read a paper on the "Treatment of Substantive Emphysema" before the New York Academy of Medicine.

For the chronic interstitial pneumonia which so often attends the disease he suggested change to an out-door life in a favorable climate, total abstinence from alcohol and tobacco, and partial abstinence from sugars and starches. Iodide of potassium, iron, and cod-liver oil might, by improving the general health, delay or modify the progress of the disease, without any specific action upon it. He also recommended the inhalation of compressed air, and the expiration into rarefied air, to make the pulmonary circulation more active, and thus bring about a change for the better in the nutrition of the lung-tissue. He had more frequently used compressed oxygen gas with real benefit.

The *constant dyspnœa* he thought arose from thickening of the walls of the air-cells and bronchi, with dilatation and congestion of the blood-vessels in the stroma of their mucous membranes; also from chronic endarteritis, rigidity and contraction of the walls of the arteries; also from dilatation and hypertrophy of the right ventricle; all interfering with the circulation. The sudden attacks of dyspnœa were due to contraction of the pulmonary vessels, which disappeared after death, as they could then be injected readily.

The remedies were those already enumerated, and drugs known to diminish arterial tension, such as iodide of potassium, chloral hydrate, belladonna, stramonium, and opium.

Some of the severest asthmatic attacks came from spasmodic contraction of the bronchi. The remedies were the inhalation of the fumes of stramonium and nitrate of potassium, chloroform and ether; the use of emetics, belladonna, the compound spirits of ether and opium.

For the venous congestion of the stroma of the mucous membrane, which is often so great as to make it resemble erectile tissue, the remedies are those which cause a large and rapid exudation of mucus from the bronchi, such as lobelia and *grindelia robusta*; the rapid determination of blood to the skin by means of dry cups, and such drugs as stimulate the heart, like caffeine, convallaria, and digitalis.

For the spasmodic contraction of the smaller branches of the pulmonary artery, which causes so much distress in this disease, as it also does in angina pectoris and in uræmic attacks, we must use the remedies which quickly diminish arterial tension, such as amyl nitrate, chloral hydrate, potassium iodide, and opium.

Chronic bronchitis is a very important feature in many cases of emphysema. It is

more apt to be favorably affected by change of climate and mode of life than by drugs.

For the general venous congestion, loss of nutrition, and anæmia the indications seemed to be to use cardiac stimulants, such as caffeine, convallaria, and digitalis; to improve the nutrition by iron, oxygen, and fats, and change of climate.

DISCUSSION.

DR. WM. H. THOMSON thought there was bronchitis in all cases, and this was generally caused by chills of the skin from too thin clothing: flannel, or even buckskin, should be worn from November to June of each year; thick shoes, woollen stockings, sleeping in flannel in the winter-time, etc.

The next great cause was the excessive use of meat in this country, viz., meat three times a day, or with all the meals. The nitrogeous wastes irritated the blood-vessels, especially of the lungs, kidneys, and other organs, producing general sclerotic disease, with thickening of all the arteries and excessive growth of new interstitial connective tissue. He believed, next to change of climate, an emulsion of linseed-oil was the best remedy for the bronchitis, although it was true that chloral and morphine were generally added to it. Linseed-oil was the best of all expectorants. For the sclerosis and excessive growth of connective tissue he thought small doses of corrosive sublimate more useful than iodide of potassium, when aided by light diet, such as milk, koumiss, fish, vegetables, fruits, etc.

Nitro-glycerin was a good palliative, and sometimes more: it not only lessened arterial tension, but raised the specific gravity of the urine, and cleared the blood of many waste and irritating products. Arsenic was another useful remedy; it, phosphorus, corrosive sublimate, and cod-liver oil all produced fatty degeneration, softening of sclerotic tissue, and thus aided their absorption or removal.

DR. GEORGE L. PEABODY agreed with Dr. Delafield in almost all his views, and thought his symptomatic treatment admirable. He disagreed with those who supposed that iodide of potassium or any other remedy could act as a resolvent of hardened and thickened connective tissue, except in syphilitic cases.

DR. KINNICUTT thought that spasm of the small vessels played as large a rôle clinically as claimed for it by Dr. Delafield. He believed that nitro-glycerin was even more useful in chronic and persistent dyspnœa than in acute spasmodic attacks. He gave it internally in small doses three times a day, and was satis-

fied with the relief caused by it. Chloral and the iodides were also useful.

DR. PUTNAM JACOBI laid stress upon the value of compressed air, and cited cases relieved by it. It neutralizes the dead residual air which remains in such large quantities in the air-cells and smaller bronchi in cases of confined sclerosis and emphysema of the lungs; also the retained carbonic acid gas, which is such an important irritative cause of the growth of new connective tissue.

DR. J. PETERS, the Chairman, called attention to the iodide of ethyl, which has a larger quantity of iodine in it than any other preparation. If the iodine in the iodide of potassium is the active agent, then iodide of ethyl must be still more useful. It is volatile, and may be used for inhalation, like nitrite of amyl and nitro-glycerin, and may also be taken internally. Whatever the theoretical views may be about it, it certainly is a very useful remedy in emphysema. It has an anæsthetic action when inhaled. It is absorbed into the blood, decomposed in the body, and excreted as iodide of potassium. It has been given internally in doses of 2 to 5 decigrammes, or 3 to 8 grains, in scrofula, obstinate catarrhal and rheumatic affections, and in cardiac dropsy. Its chief use, however, according to Brunton and others, is as an antispasmodic in asthmatic paroxysms, either of the purely spasmodic kind, or occurring in chronic bronchitis and emphysema, or in cardiac or laryngeal disease. In some cases it gives very great relief, and not only cuts short the paroxysm, but benefits the bronchitic condition.

Muriate of ammonia has a great reputation in Germany in the resolution of thickened and sclerosed tissues. Dr. Peters sincerely hoped that this might be so, and was inclined to sympathize with those who claimed the same for phosphorus, arsenic, and corrosive sublimate. He was an optimist in medicine: there were so many powerful drugs which produced such manifest changes in the functions and tissue metamorphoses of the body, that it seemed as if we at some time, and hopefully not in the far-distant future, would learn how to apply them successfully even in the cure of some organic diseases.

He also called attention to nux vomica as a great heart tonic, often useful when digitalis, caffeine, and convallaria had failed. It was also useful in emphysema in compensating the weakness of the respiratory muscles which often prevailed, and which so often caused chronic dyspnœa. It would have to be avoided in spasmodic attacks, in which, and

spasm of the blood-vessels, he suggested conium as the most powerful paralyzer of muscular action that we were acquainted with.

Reviews.

MANUAL OF OPERATIVE SURGERY. By Joseph D. Bryant, M.D.

New York: D. Appleton & Co., 1887.

The work of Prof. Bryant, while it does not pretend to be a rival of the larger works or systems of surgery, is of its kind a most excellent book. Theories and doubtful methods of operating find no place in the volume. It is rather to known facts and established procedures that the author has limited his labor, and the judgment which he evinces in selecting from the various methods of operating in surgical cases is generally of a most reliable nature; indeed, it is this selecting from many proposed procedures, which are usually met with in the larger surgical works, that much of the value of Prof. Bryant's book depends, and in this respect the book becomes a very able aid to the unexperienced surgeon. The scope of the work includes most of the surgical diseases, and the operative methods for their relief or cure. The operations peculiar to the female sex, and the surgery of the eye and ear, are not considered in the book.

Chapter i., which discusses "General Consideration," or what may be termed the technique of surgical operations, is a most valuable one. The various rules and suggestions which are found here are evidently the outcome of a large experience and an observing surgeon. A careful study of this section of the book will undoubtedly tend to perfect operative surgery, and a faithful carrying out of the various methods proposed must certainly give more satisfactory results than would otherwise be obtained; since it is very often just this attention to seemingly small matters that determines the favorable termination of an operation, and a neglect or careless performance of minute details may frequently defeat the successful result of the surgeon's labor.

The chapter on "Agents for Controlling Hemorrhage" is all that could be desired, being very complete, and fully represents all the advances of modern surgery. It is with much satisfaction that we find the author an advocate of the catgut ligature for ligating arteries of every size, and with him we have never had occasion to regret their employ-

ment, believing they offer the same amount of security against accidents as any other variety of ligature.

Chapter iii., on the "Treatment of Operative Wounds," is a most important one, and treats of that department of surgery which, of all others, is at the present time claiming more attention from surgeons than any other. The question to be settled, if it is not already decided, is that of antiseptic surgery. Much has been written pro and con of this subject, and it is yet not finally, or at least universally, agreed upon who are in the right. Prof. Bryant, it gives us much gratification to say, is another to be added to the list of those who advocate the adoption of antiseptic measures in the dressing of wounds after operation, and the rules he gives in order to accomplish this end are those which may be adopted with every probability of success.

Chapter iv. treats of the "Ligature of Arteries," and the directions given for performing this operation upon the different arteries are brief, but in no way deficient in the necessary information to successfully ligate any vessel, provided strict attention is given to the author's rules. The illustrations which are given under this chapter are unusually good, and will greatly aid one in the study and practice of this operation.

"Operations on Veins, Capillaries, etc." This chapter considers ligature of veins, and the very proper advice is given to ligate these vessels, when of any size, if divided during the course of an operation. The advisability of securing the borders of a partly divided large vein with catgut is thought to be a questionable procedure, notwithstanding it has been recommended by many writers, and the danger of secondary hemorrhage believed to be much greater than if the vessel is tied above and below the wound in its walls. The operation of excision, crushing, and ligaturing for hemorrhoids is described, the preference being given to the ligature. Having had occasion to perform this operation quite frequently, and having taken the opportunity to employ the several methods proposed by different writers, we have, from our experience, decided upon the crushing operation with the cautery, since the results both to ourselves and patient have, we think, been much more satisfactory than when other methods have been employed. The operation by injections of carbolic acid or astringents has in our hands not proven itself very satisfactory. The author also cannot recommend it, and the occasional bad results—abscesses, gangrene—

which may follow its use should make us hesitate to employ it. The operations for varicocele, venesection, transfusion, and nævus are also given in this chapter.

Chapter vi., on "Operations on the Nervous System," in which the operation of trephining is given, and Prof. Bryant thinks it is one which is more often performed than the requirements of many cases warrant. From our experience in this class of cases we have formed rather the contrary opinion,—that is, there has been a neglect on the part of the surgeon, and the operation has been postponed until too late, or not performed at all. To consider the opening of the skull cavity as a trifling surgical operation, one that may be compared with the amputation of a phalanx in severity, as has been done, we believe to be rash and dangerous surgery, but by employing every care, and the use of every antiseptic precaution, the operation is generally not followed by any unfavorable results. Cerebral localization as a means of diagnosis in head injuries has also received the attention of the author, and its importance in assisting the operating surgeon indicated. Division, excision, and stretching of the nerves are included under this chapter; and it is advised, when possible, if excision be done, not less than two inches in the continuity of the nerve should be removed. The suturing of divided nerves is recommended, its results being in every way favorable, while the practicability of nerve transplantation is as yet thought to be undetermined.

The chapters devoted to "Operations on Tendons, Fasciæ, Muscles, and Bones" are well written, and include all that modern operative surgery has advanced to benefit these lesions. More especially is this to be noticed under the various operations which have been proposed and done for the different bone lesions. Amputations are described in full and profusely illustrated, making a very valuable chapter on this important division of operative surgery. Under deformities we should have liked described the method of applying the plaster-of-Paris jacket by means of the hammock for curvature of the spine, in addition to the method of suspension of the patient; since the former is quite as efficient and much more comfortable to both patient and surgeon in its application, more particularly may this be said in regard to young children. Plastic surgery is very thoroughly described, and numerous cuts are given to illustrate this division of operative surgery, which greatly facilitate one to understand the

various methods proposed for the relief of the lesions in which such operations are necessary. A chapter is devoted to "Operations on Hollow Viscera in Contact with Serous Surfaces," and includes, among others, those operations which may be performed upon the intestinal tract, and those in connection with the kidney, spleen, and hernia. The operations on the anus and rectum have received due attention.

The chapter on "Operations on the Urinary Bladder" describes catheterization, aspiration, cystotomy, and digital exploration of this organ. Lithotomy, litholapaxy, and lithotomy are also fully described. An instrument, devised by the author, combining both a crusher and evacuating-tube, to be employed in removing the last fragments after the larger instrument has been used, or to remove a very small calculus, seems to us a most useful and valuable accessory to the mechanical appliances that may be utilized in performing the crushing operation.

Chapter xvii., on "Operations on the Penis and Scrotum," discusses those for hydrocele, and preference is given to incision with excision, while injection of the sac is also spoken highly of. In the employment of the tincture of iodine for the latter purpose the author directs it to be diluted with three or four parts of water. This we believe to be a mistake, and in our practice we invariably use the undiluted tincture; the result has always been satisfactory; indeed, so much so that for the past few years we have entirely confined ourselves to its use in the treatment of this lesion. The operations for "congenital malformation of the urethra" and for "acquired urethral defects" are in no respect deficient, and represent very completely our knowledge on these subjects. External and internal urethrotomy are briefly described, and, in regard to the latter, Otis's operation has received a full description, from which we would infer that the author regards it favorably, and to speak of our own experience of this method of treatment of urethral stricture, we have had a successful result in every case in which it has been employed, and we are inclined to consider the operation the best yet advanced for this lesion.

The concluding chapter of the book is headed "Miscellaneous Operations," and includes, among others, extirpation of the breast, tracheotomy, operations for ganglion, wiring of bones for compound fractures and fracture of patella, etc.

In concluding our notice of Prof. Bryant's book, it remains for us to congratulate him

upon the successful result of his labor. He has written a very able and reliable surgical work, one that may be consulted both by surgeon and student, and one that contains all the more important advances of modern surgery. The publishers' part of the work has been well done, and the numerous illustrations add much to the value of the volume.

J. H. C. S.

THE SURGERY OF THE PANCREAS, AS BASED UPON EXPERIMENTS AND CLINICAL RESEARCHES. By N. Senn, M.D.

The above pamphlet is a reprint of Dr. Senn's essay read before the American Surgical Association, April, 1886, and in which, as stated by the writer, "an attempt will be made to lay the foundations for a rational method of treatment of some of the injuries and diseases of the pancreas by direct surgical measures." This study begins with the anatomy of the organ; in fact, its development and also its physiological function. Experimental investigations were made in order to ascertain the tolerance of the pancreas to direct treatment, and also with the object "to elucidate some of the causes and pathological conditions of some of the well-recognized lesions of this organ." Traumatisms are considered under contusions and wounds, both penetrating and gunshot. Acute and chronic inflammation of the pancreas, also gangrene and abscess, are quite fully described. Hemorrhage of the pancreas, including hemorrhagic cysts and diffuse hemorrhage, have received attention. Cysts of the pancreas, and tumors of the pancreas, including hypertrophy, sarcoma, and carcinoma, are treated of by the author, and finally a consideration of tuberculosis, lipomatosis, and lithiasis of the ducts of the pancreas terminate the work.

THE MECHANISM OF INDIRECT FRACTURES OF THE SKULL. By Charles W. Dulles, M.D.
Philadelphia: P. Blakiston & Co., 1886.

This brochure by Dr. Dulles discusses, and very ably endeavors to determine, the mechanical law which influences indirect fractures of the skull. That portion of his essay which relates to the historical part of his subject is an evidence of much research, and we feel indebted to him for arranging it together in such a readable form. In order to satisfactorily present his subject, Dr. Dulles has studied it under the following heads: "Elastic Properties of the Skull," "Anatomical Peculiarities of the Skull," "Architectonic Peculiarities of the Skull," "Influence of Soft Parts and Contents of the Skull," and finally "Study of Cases." The conclusion arrived at by the author is that the "bursting theory" has more to recommend its acceptance than any other; indeed, he believes it to be sustained by "reasoning, experiment, and clinical observation."

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OUTLINES OF THE PATHOLOGY AND TREATMENT OF SYPHILIS AND ALLIED VENEREAL DISEASES. By Hermann von Zeissl, M.D. Revised by Maximilian von Zeissl, M.D. Translated by H. Raphael, M.D.
D. Appleton & Co., New York, 1886.

The influence of the Vienna school over Germany, and the entire medical world, has during the past twenty or thirty years been of a very decided and positive character, and in no special branch of medicine has this influence been greater than in that relating to the subjects treated of in the above volume. The names of Sigmund, Hebra, and Zeissl must ever remain in the foreground as investigators, writers, and teachers upon the various lesions resulting from venereal diseases. The translation of Prof. von Zeissl's work we consider to be a most valuable addition to English medical literature, and congratulate the translator upon the faithful and most excellent rendering he has given us; indeed, we have not noticed, in a careful reading of the book, any serious errors or obscure passages, which are so liable to occur in a translated work.

The book is divided into three sections, which treat respectively of gonorrhœa, soft chancre, and syphilis. The section devoted to syphilis occupies about two-thirds of the volume. An introductory chapter on "The Venereal Contagions" gives a brief *résumé* of the opinions held by the authors upon this very important subject. It is here stated the belief that there exists two kinds of poisons, separate and distinct, one for the chancre and one for the chancroid. Semen is thought to be a probable carrier of the virus. Why all syphilitic parents do not beget syphilitic children is said, as yet, not to have been determined. The discharge from a chancroid upon a syphilitic person inoculated upon a non-syphilitic is stated always to result in a chancroid only. Syphilitic inflammatory lesions, papules, nodules, etc., when irritated by implanting upon these chancroidal secretion, are said to be capable of causing the primary lesion of syphilis when inoculated upon a non-syphilitic individual. Mixed chancre, such as described by the Lyons school, has been discarded long ago. The syphilitic pri-

mary lesion (chancre) is believed to be the first manifestation of general, constitutional syphilis. We have selected the above principles from those given by the authors in order to show the views which they hold upon the points that are still disputed by writers upon these subjects. When it is remembered that the opinions here given are based upon many years of observation, and an experience in treating this class of affections seldom, if ever, exceeded by any, their value must necessarily be very great, and a denial of their correctness received with hesitation.

Gonorrhœa is defined as "a catarrh of the urethral mucous membrane," and a differentiation of the disease is made into a serous, epithelial, or mucous, and a purulent gonorrhœa, although a distinction between these varieties cannot always, it is said, be strictly maintained. The serous and mucous forms are forerunning stages of the purulent catarrh of gonorrhœa, and it is thought that the disease may be arrested at any one of these stages.

While it is admitted that gonorrhœa is undeniably a disease that may be transmitted from one person to another, the views as to the nature of the infecting agent are not considered by the authors yet sufficiently clear as to positively determine what it is. The possibility of occasioning a purulent secretion in the urethra by means of mechanical, chemical, and pathological irritants is not denied, being, it is said, "a matter of daily observation;" and, indeed, Von Zeissl does not stop here, but goes further, and writes as follows: "In our practice, however, we have seen numerous instances where men troubled only with the prodromal phenomena of gonorrhœa—*i.e.*, a prickling sensation at the meatus urinarius, where not a trace of pus could be found in the urethral discharge—infected their wives and mistresses. We have likewise had the experience that the slight mucous secretion of gleet is capable of communicating a gonorrhœal disease." The conclusion reached from their experience and investigations upon this subject is "that the morbid potency of a gonorrhœal infection is not to be found in the pus-cells, but in a specific catalytic power of the secretion,—*i.e.*, in a contagion which adheres to the epithelial as well as the pus-cells, and which we are not able to isolate any more than other kinds of contagion. The hypothesis that an animal or vegetable parasite (Neisser's gonococcus) forms the basis of a gonorrhœal contagion has not yet been satisfactorily demonstrated." This view of the question we

do not think is one which very materially helps us out of the difficulty. To say the agent of contagion is a "specific catalytic power" tells us nothing. The hypothesis of the gonococcus is much more satisfactory, but, unfortunately, we, with the authors, have not as yet been convinced of its etiological nature. From our own experience, and from the present state of the scientific investigations upon this subject, we are inclined to the pus infection as the genetic factor in this disease, and opposed to any theory which depends upon a specific element as a causative agent.

Prophylactic measures against gonorrhœa the authors, very properly, we think, believe are all uncertain, and they can only recommend thorough washing with water, and urination directly after copulation, as a possible preventive against infection. In regard to the abortive treatment of gonorrhœa, its accomplishment is considered beyond our present ability, and the methods which have been suggested are thought to be often positively injurious, without any beneficial result.

The treatment of gonorrhœa by the authors is such as we can fully endorse, both from its simplicity and efficacy. Local methods, by means of injection, are preferred to internal medication, but it is not to be forgotten that "most cases of gonorrhœa would get well within four or six weeks without injections or internal medication," therefore, we think, in many cases, treatment has received credit due to nature. The sections which discuss the various complications that may arise during an attack of gonorrhœa are very satisfactory, giving the symptoms, diagnosis, and treatment of these lesions in a concise and practical manner. The same may be said of the section devoted to gonorrhœa in the female.

The soft chancre or chancroid is defined as an ulcer, the origin of which is ascribed to a contagious specific matter. In regard to the nature of the specific matter, it is said, "we know no more regarding the contagious element which is capable of giving rise to soft chancre than we do of the nature of contagions in general." Here, again, we have the etiological factor being referred to a specific element; and, again, we are not willing to accept this view, since all the difficulties of believing in what we cannot demonstrate may in a great measure be removed by simply looking upon the chancroid as a non-specific ulcer, occasioned by an irritant, *viz.*, pus. Experimental investigations and pathological lesions apparently sustain the latter

view, while, on the contrary, no investigations have, as yet, been able to show any specific organisms in etiological relation with this disease, nor is it possible to differentiate between many pathological lesions, resembling the chancroid, but of known origin, of a non-specific nature.

The plan of treatment for chancroids advised by Von Zeissl is a most excellent and efficient one, which we have most faithfully tested for the past three or four years. Its success depends upon its simplicity, and non-interference with the healing process; therefore all irritants and caustics are to be avoided, but cleanliness and protection of the lesion practised. In a word, the chancroid we think should be treated in reference to the local condition of the sore. Thus, when normal, if such a term is ever applicable to a pathological process, cleanliness and protection; when irritable and painful, soothing applications and anodynes; when indolent and stationary, stimulants, and even cauterization.

The section on "Syphilis and its Different Lesions" is a very complete outline of this disease; indeed, in many cases the term outline does not sufficiently express the scope of the work, since frequently it would be difficult to more fully describe the lesion under consideration than has been done by the authors, and where descriptions have been somewhat briefly given, we find nothing of importance has been omitted, so that for the practical physician we know of no better work for reference or study.

In regard to the nature of the virus of syphilis, Von Zeissl believes it to be a "fixed principle," which, as yet, has neither been discovered by the microscope nor chemistry. The claim to the discovery of a peculiar micro-organism in the blood and morbid lesions, which is the cause of syphilis, has not yet been confirmed in the author's opinion. The first manifestation of the presence of the syphilitic virus is said to be at the spot where it was deposited and absorbed, and the various appearances presented by the local lesion is thought to depend upon the nature of the vehicle in which the virus is contained, —i.e., pus, ichor, or with some non-irritating fluid, such as blood, serum, or lymph. When the vehicle is irritating there results ulceration and suppuration; but when the fluid is of an opposite nature, and there is no deep solution of continuity at the place of infection, there occurs no suppuration or ulceration, and a rapid healing of the excoriation, the characteristic induration of the constitu-

tional disease appearing later. The value of the auto-inoculability of an ulcer upon one affected with it is believed to be of little diagnostic importance, since pus of non-venereal origin will produce on syphilitic persons a series of inoculable ulcers. Much has been written upon the way in which the virus of syphilis gains access to the system, some claiming that the blood is the means of conveyance, others the lymph, and at the present time both have their advocates. We are in accord with Von Zeissl, who says "that the syphilitic virus is conveyed to the blood by the lymphatic vessels," and we think the course, symptoms, and history of the disease fully sustain this view. The various lesions which may result from syphilitic infection, and the different organs and structures of the body which may be attacked by the disease, are most ably described. The same may also be said of hereditary syphilis and its lesions.

The great experience of Prof. von Zeissl, and the unusual opportunities he has had in the treatment of syphilis, lead us to turn to this portion of the book with much interest, in order to learn his opinion upon this most important division of the subject. Here we find the authors are at variance with most English, American, and French syphilographers in that they do not place the same value upon the mercurial treatment of this disease, but the expectant or iodine treatment is advised. It is believed "that when mercury is employed very early—as soon as the primary lesion is detected, or the first eruption appears—the symptoms then present will, it is true, speedily disappear; but obstinate relapses are more likely to follow than when syphilis is first allowed to spend its fury." Therefore it is seen that the objection to this drug is its too early employment. Thus, it is stated "that it is not the mercury that is injurious, but the improper time chosen for employing it against syphilis." Indeed, so strongly is this opinion held by the authors, that they do not hesitate to write as follows: "Syphilitic patients who are mercurialized very early, especially before general phenomena have appeared, are oftener attacked by grave lesions of syphilis (cerebral and visceral), and they are oftener subject to relapses than those who, for a long time, were not treated at all, or first with iodine and later on with mercury." And, again, when treating of the predisposing causes of syphilis of the nervous system, "the too early use of mercury" is enumer-

ated among others. The time when mercury should be used, according to the authors, is only after the expectant and iodine methods have failed. To better understand their treatment of syphilis, we give a brief outline of the plan they advise. Thus, a patient affected with a chancre, and having no constitutional symptoms, the treatment is confined to the local lesion. When the syphilitic skin-lesions appear, either macular or papular eruptions, nothing is given, unless, at the end of eight weeks, there is no improvement, or it has not entirely disappeared, they then prescribe iodine preparations. If eight weeks more are passed, and the symptoms of the disease have not entirely disappeared, "then the treatment with mercury may be resorted to without any fear concerning the future course of the disease." The conclusions arrived at by them, in following out their plan of treatment in regard to the expectant method, are, "that constitutional syphilis will follow, even if not a particle of mercury is used, and that the assertion of anti-mercurialists, that the so-called secondary and tertiary syphilis are only the manifestations of the mercurialization, is not true. Relapses and the gravest forms of syphilis may supervene just as well after a strict and scrupulously carried out expectant plan as after an anti-specific treatment. We only wish to say that these phenomena occur comparatively rarely after expectant treatment, and that the relapses are apt to occur less often than after an early mercurial treatment." And for the iodine treatment they write, "Iodine in proper quantities, in conjunction with a carefully regulated regimen, are sufficient to cause the symptoms of syphilis to disappear, or at least to be weakened, so that only a few mercurial inunctions will be necessary to complete the cure, without fear of a relapse occurring in years to come." Notwithstanding this method of treating syphilis has the endorsement of such high authorities as our authors, we fear it will not be adopted by many American physicians, who have been brought up to believe in the almost specific effect of mercury in this disease, and who, in their experience, have undoubtedly seen good results follow its employment. However, as previously remarked, the great experience and unusual opportunities of the authors to investigate this disease in all its stages make us hesitate to oppose their conclusions, and we can only say our experience in the opposite direction, viz., first mercury and later iodine, has given satisfaction.

J. H. C. S.

THE JOURNAL OF COMPARATIVE MEDICINE AND SURGERY. Edited by W. A. Conklin, P.H.D.V.S., and Rush Shippen Huidekoper, M.D., Veterinarian, Alfort, and published by A. M. Hummel, M.D., 1217 Filbert Street, Philadelphia.

With the issue of the October number the management of the *Journal of Comparative Medicine and Surgery* passes into new hands. The publication office is transferred from Philadelphia to New York, and the *Journal* itself is enlarged and improved in every department. The paper and the typography are better than in its earlier issue, and the number of pages are increased and its value enhanced by the addition to the editorial corps of some of the best known and most scientific members of the medical profession. The *Journal* has assumed a more thoroughly scientific aspect than ever, utilizing, as it does, the best material from Harvard, the University of Pennsylvania, the Royal Veterinary School of Dresden, and other prominent colleges. It is the only journal published on comparative medicine and surgery, and the reputation of its editors is sufficient guarantee that this field of science will be well represented.

The October number contains a number of valuable original articles, among which we may mention "Avian Tuberculosis," by John Bland Sutton, F.R.C.S.; on "Injuries of the Beak in Birds and the Method of Repair," by R. W. Shufeldt, M.D.; the "Rôle of Microbes and their Chemical Products in the Causation of Diseases," by James Law, F.P.C.V.S.; and "Atrophic Carcinoma," by Richard W. Burke, V.S.A.V.D., and others.

ANALYSIS OF THE URINE, WITH SPECIAL REFERENCE TO THE DISEASES OF THE GENITO-URINARY ORGANS. By Hofmann and Ultzmann. Translated by T. B. Brune and H. H. Curtis. Second Edition. Appleton & Co., 1886.

The names of Hofmann and Ultzmann are so well known as those of authorities upon matters pertaining to the examination of urine and urinary disorders that the profession is ready to welcome a second edition of this very valuable treatise.

After a short introduction the writers discuss the histology of the urinary apparatus. This is treated as briefly as is consistent with the demands of the subject. The greater part of the book is devoted, as its title indicates, to the analysis of the urine and its relation to disease; and here there does not seem to be anything wanting to make it nearly complete. Qualitative examination receives careful attention, and is brought

fully up to date by the added notes of the translators. These notes—always separated by brackets from the original text—include the acetone and diacetic acid reactions; the latest methods for the recognition of levulose, lactose, peptone, propeptone, mucin, globulin, etc.; the newer tests for bile, albumen, and glucose, etc. The chemical notation is employed to explain the reactions when not too complicated.

The methods for the quantitative analysis of but a few of the constituents of the urine are given, and occupy comparatively little space. These methods are, however, reliable, and made very plain by means of illustrative examples worked out by way of explanation.

The microscopical and chemical characteristics of the urinary sediment are also ably treated, and the book is enriched by the addition of a series of lithographic plates, taken principally from the authors' atlas.

Probably the most valuable feature of the book is the attention devoted to the relation which urinary analysis bears to clinical diagnosis. Here we find, for example, a discussion of the causes which increase or diminish the elimination of urea; the different forms of renal disease producing albuminuria, and the microscopical and chemical means of determining which of these is present; the various causes of hæmaturia; the different stages of cystitis, etc. There is also a useful list of the diseases in which alterations of the urine are apt to occur.

The work is not so exhaustive as the large treatise of Neubauer and Vogel, and, while treating as thoroughly of analytical methods as some of the smaller books do, its clinical nature renders it invaluable to the practising physician.

J. P. C. G.

A LABORATORY GUIDE IN URINALYSIS AND TOXICOLOGY. By R. A. Witthaus, A.M., M.D.
New York: Wm. Wood & Co., 1886.

This little book is well suited to lie conveniently to hand upon the laboratory table. It is bound in note-book style, the backs being united at the top, and thus opening from the reader, and one side of each leaf is left blank for additional notes.

The subject-matter is arranged in a series of short numbered paragraphs, describing very briefly but quite clearly the progressive steps to be followed in an examination, the whole representing the acme of condensation. Yet even with the abbreviated words and style it is surprising how much useful matter the book

contains. The beginner, and even one more advanced in urinary work, will find in it nearly all that he really needs.

The last portion is devoted to the chemical investigation of the poisons, and contains the various tests usually employed.

The little volume has a few faults. It is a pity that, although it contains volumetric methods for the phosphates and sugar, and processes requiring as great care as does the gravimetric determination of albumen, yet the volumetric methods for urea are entirely omitted, Fowler's quantitative method being the only one given. The phenyl hydracine test for sugar has also been left out, although it is now well recognized in Germany. And, however useful it may be to know the antidotes to the various poisons, their enumeration seems rather superfluous in a laboratory guide. On the whole, the book is a useful addition to our literature, and is sure to be valuable to the physician to whom time is a great consideration.

J. P. C. G.

Correspondence.

ICE-WATER ENEMATA.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—I have just read with interest an excerpt from the *British Medical Journal* of October 30, 1886, in relation to the efficacy of ice-water enemata in the collapse occurring in diarrhoea of children, and wish to add my testimony as to its efficacy in a wider field. I first used it in a case of prolapse of the rectum in acute dysentery, curing both troubles in a short time. This was a soldier in the service in 1863. In 1868, in a case of acute hemorrhoids, with prolapse of the rectal mucous membrane from acute diarrhoea, ice-water relieved all the symptoms more rapidly than any other treatment of which I am cognizant.

Especially valuable evidence is a case of acute procidentia of the rectal mucous tissue in a case of intercurrent dysentery in a patient 2 years of age, undergoing treatment by aspiration for an acute empyema after "measles." Here the pain from the rectal trouble was threatening collapse, coupled as it was with frequent dejections, which were not relieved by opiate enemata and saline cathartics. Recourse was had to ice-water enemata after each defecation, with the most gratifying results as to pain and frequency of the discharges. The livid mucous surface, as

it became chilled, was blanched in appearance, and the procidentia, or intussusception, was restored to its normal condition without any other aid.

RALPH C. HUSE, M.D.

TOXIC EFFECTS OF TEA.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—I have read with much pleasure the remarks of Dr. Davies on "The Toxic Effects of Tea" in your last issue, and I beg leave to ask him the following questions concerning some of the propositions laid down in his paper, which may prove to be of historical as well as of scientific interest:

1. When, by whom, and by what methods were theine and caffeine found not to be physiologically and chemically identical, and where is the discovery recorded?

2. Does not the physiological action of tea and of coffee in the main correspond with that of theine and of caffeine, and, if not, where is a record of the experiments to be found?

I am sincerely yours,

THOS. J. MAYS.

November 26, 1886.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—Will you kindly settle the following question,—*i.e.*, Can we have a physiological action of *any* drug not preceded by a *chemical* action of said drug?

DRS. LANGSON & SCHULZ.

AURORA, NEB., December 7, 1886.

[The answer to be given to such an inquiry as the above depends very largely upon the meaning with which the terms are employed. We should say that every functional act of the living tissue is accompanied by nutritive—that is, by chemical—changes in such tissue, and therefore by chemical action. The drug that affects functional activity must check or alter the chemical movements in the affected tissue, and we should certainly say that the drug had a chemical influence. The term physiological action is used with such various significance that before any close reasoning is indulged in it must be defined. The writer often means that the physiological action of the drug is the ultimate apparent effect which it has upon the function. Thus, the physiological action of atropine is to arrest the secretion of the

salivary glands. Such arrest is undoubtedly the result of primary influence exerted upon the chemical movements of protoplasm, either directly in the gland itself or through the nervous tissue which dominates the gland, and would therefore be said to be preceded by a chemical action or influence. On the other hand, the term physiological action might be used to express the primary impression produced by the drug upon the living tissue. Employed in this way, physiological action would itself be a chemical influence. We think the term is commonly employed by writers to indicate the results of the chemical influence rather than the primary influence exerted by the drug.—Eds.]

Notes and Queries.

FATAL RESULT OF PEROXIDE OF HYDROGEN INJECTIONS.

A Norwegian surgeon, DR. LAACHE, has reported a case in which a fatal result followed an injection of peroxide of hydrogen into the pleural cavity. The patient was a man 28 years of age, who had had a portion of the ninth and tenth ribs resected for empyema. The operation had been successful, and the wound progressed favorably, and two months after the operation there remained only a fistula about an inch and a half long. In order to hasten the healing of this, hypodermic injections of a three per cent. solution of peroxide of hydrogen were resorted to, as this method of treatment had given very satisfactory results in two somewhat similar cases in which it had been tried. Six injections, each containing 0.8 cubic centimetre of the solution, were administered without any particular effect. At the seventh, however, the patient complained of pain and faintness, the pulse failed, the respiration became oppressed, clonic contractions occurred in the right arm, the head turned to the left, the jaws became tightly set, the face became cyanotic, and the patient died in ten minutes. The necropsy, which was not made till forty-eight hours after death, revealed nothing very striking. The heart was dilated and contained liquid blood without air-bubbles; some ecchymoses were found in the parts of the left lung which were adherent to the chest-walls. In the fourth ventricle of the brain an ecchymosis the size of a pin's head was seen. A number of air-bubbles were present in the blood of the hepatic veins, and some were seen on cutting into

the spleen and kidneys. The cause of death was therefore by no means clear. Dr. Laache suggested that it may have been the small extravasation in the fourth ventricle or shock. Dr. Wulfsberg, who took part in the discussion on the case at the Christiania Medical Society, thought it was probably due to the introduction of the drug into the circulation. He thought that the strength of the blood-current might have carried the peroxide, if introduced into a vein, through the right heart and lungs almost unchanged, but that afterwards more oxygen might have been disengaged than the blood could absorb, and bubbles were thus produced, which may have been the immediate cause of death. Where animals have been subjected to injections of air into the veins, bubbles are not always found in the blood. In these cases Dr. Wulfsberg thinks that death has been due to paralysis of the heart, for when examinations have been made immediately after death bubbles have been found in the coronary arteries. As so long a time had elapsed before the necropsy in Dr. Laache's case, these might have been absorbed.—*Lancet*, October 9, 1886.

PILLS AND SYRUP OF SPARTEINE.

HOUDÉ recommends the following preparations :

1. Sulphate of sparteine, gr. viiss;
Excipient q.s. to make 50 pills.
From 2 to 10 pills daily.

2. Sulphate of sparteine, gr. v;
Syrup of orange, f3x.

One-half ounce of syrup contains $\frac{1}{8}$ gr. of the drug.

Germain-Sée and Laborde have shown that in doses of $1\frac{1}{2}$ grs. sparteine is valuable as a heart-stimulant, indicated both when organic lesions exist and when an impeded circulation taxes the heart. Its effect upon the pulse is prompt and marked, and its use has been free from unpleasant after-effects.—*Le Monde Pharmaceutique*, November 3, 1886.

EULYLYPTOL.

"Eulylyptol" is the name given by Dr. SCHMELTS to a mixture consisting of six parts of salicylic acid to one each of carbolic acid and oil of eucalyptus, which he considers preferable as an antiseptic to iodoform, corrosive sublimate, or carbolic acid. Dr. Schmelts considers that a chemical combination takes

place between the ingredients, since carbolic acid cannot be detected in the mixture. It is described as having a strong aromatic odor and an acrid burning taste, and as being nearly insoluble in water, but very soluble in absolute alcohol, ether, chloroform, and a mixture of equal parts of alcohol and glycerin. It is also soluble in ammonia and alkaline solutions. According to Dr. Schmelts, it completely arrests the fermentation of all putrescible substances, a small quantity added to urine, under any condition, being sufficient to preserve it during a month.—*Pharmaceutical Journal and Transactions*, October 30, 1886.

INFANT FEEDING.

There is the greatest divergence of opinion among practical and enlightened members of our profession on this most vital subject. The poor mother, unable to suckle her infant, has not alone to face the conflicting instructions of doctor and nurse, the first clinging tenaciously to his physiological doctrines in spite of the screams of the infant and its non-increase in weight, and the second maintaining the excellence of her patent foods and of her various "thickenings," regardless of the future rickets in store for the luckless child. But when doctors disagree, and especially doctors who speak with the authority of experience, the mother's bewilderment may well be great, and she is either tempted to fall back on the time-honored rule of thumb, or take refuge in the hypothesis of compromise that the proper course lies sometimes with one, sometimes with the other, and sometimes between the two. We shall not presume to adjudicate between the diverging views of our correspondents. With the limited knowledge at present available on the subject, they seem to us alike too sweeping and dogmatic for universal acceptance. Let us attempt the humbler task of indicating some simple homely tests which ought to be applied in any given case before we conclude that the method which has been adopted in that case is a satisfactory one.

The first test depends on the quiet and comfort of the child and the increase in body-weight. This increase ought to be from three to four ounces weekly, or more. The weight test is, however, by no means conclusive if taken alone. Many a hand-fed child when twelve months old is fat and plump, but is found to be rickety to an extreme degree; and it is well known to experienced nurses that breast-fed healthy in-

infants are often much less stout than those which are reared by hand. The advocate of any given method will not therefore settle the matter by simple weighings, although these count for a great deal.

The second test depends on the examination of the fæces. With regard to the frequency, there is a common belief that four to six is the proper number of daily evacuations for an infant during the early months of its existence. We hold this to be a mistake. Healthy breast-fed infants often pass not more than two stools a day after the first fortnight, and satisfactory hand-feeding ought to aim at a similar result. We hold that there is a presumption that an infant who passes regularly from four to six stools daily is passing a great deal of undigested food, and that so far the alimentation is imperfect. The wholesome fæces of a healthy breast-fed infant are of a bright gamboge-yellow, they are not unduly offensive, and they present very scanty traces of undigested casein. Now, in the majority of infants brought up on cow's milk, even diluted to the starvation-point, the stools are distinctly offensive, and are largely made up of masses of white casein. When this occurs, to find fault with the liver and do nothing more than prescribe the inevitable gray powder appears to us the most absolute empiricism, and the antiseptic cleansing of feeding-bottles and the banishment of tubes, excellent as these measures undoubtedly are, will not solve the difficulty in question.

How can the casein be dealt with? There are several methods open to us. First, it may be predigested wholly or in part. The simplest and readiest way of accomplishing this has, in our experience, been brought about by the use of one of the preparations suggested by SIR WILLIAM ROBERTS, which, made with fresh milk, is practically a partly-digested milk-gruel. But it is doubtful whether this method, invaluable as we believe it to be in selected cases, ought to be tried as the first routine step in dealing with the difficulty in question.

Sir William Roberts, in his lectures at the College of Physicians, referred to an observation of his own made while feeding a healthy kitten exclusively on predigested food. Without obvious or marked departure from health, the kitten, nevertheless, in respect of body-weight fell behind another kitten fed on milk. It was suggested that some atrophy of unemployed glands might be responsible indirectly for this failure in nutrition. Now,

in our problem, if we can get the infantile alimentary tract to digest for itself the casein masses, more will be gained than if the casein be predigested.

A simple, time-honored method, which we think ought always to be tried, is the dilution of the milk in varying proportions with barley-water, which, perhaps, in a mechanical way, facilitates the separation of the curd into more manageable masses. If this is found unsatisfactory, a very little malted food ought, we think, to be added to each bottle. That the whole character of the stools in respect of undigested casein may become altered after the adoption of this simple expedient we have satisfied ourselves again and again, as well as of the diminution in the actual number of the evacuations. But our physiological friends protest that this is using farinaceous food, that the infant's pancreas and salivary glands are rudimentary, and that its economy is unequal to the conversion of starch. To this objection there are several answers to be made. First, physiologically, it is by no means proved that the sole agents in the conversion of starch are the pancreas and the salivary glands, and experiments to prove the absolute incapacity of the infantile alimentary tract to convert a small amount of starch are not forthcoming. Again, in a good malted food, a great part of the starch has been already converted and rendered soluble. But let it be granted that, even after boiling, there is a small amount of unaltered starch; if the net result is that the fæces of the child are more wholesome and less frequent, that it does not suffer from vomiting, acidity, and flatulence, and that it is gaining weight, what evidence is there that the small amount of starch has done harm?

The employment of the term "farinaceous" has, indeed, brought us more or less under bondage in our directions as to infant feeding. To repeated meals of arrow-root, corn-flour, baked flour, and the like, even when made with milk, the term farinaceous is properly applicable, and we are second to none in our condemnation of such methods of feeding infants; but a broad distinction ought to be drawn between them, and the use of a very small quantity of malted soluble food added to milk. If even the malted foods be used in large relative proportion in early infancy, to the exclusion or great diminution of the quantity of fresh milk, we believe that serious risk is incurred in the direction of scurvy; and this is the more insidious because, with regard to the two tests which we have men-

tioned, the body-weight may certainly increase, and the stools may be less offensive and less frequent than under a milk regimen. The proper use of the malted foods is that they should be employed in small quantity, not in any sense as a substitute for fresh milk, but as an aid to the digestion of the casein.

We have said nothing about the humanized milk and the cream and whey methods. Useful as these plans have unquestionably proved hitherto, they have been methods for the rich and not for the poor, and their discussion may be for the present deferred.—*Lancet*, November 20, 1886.

AN INTESTINAL ANTISEPTIC.

BOUCHARD, in the *Revue Internationale des Sciences Médicales*, gives the following :

R Naphthaline,
Sacch. pulv., aa ʒiiss;
Ol. bergamot., gtt. iii. M.
Ft. pil. xxx.
Sig.—One every hour.

COMPOUND LIQUORICE POWDER.

DR. MARTIN OXLEY (*Lancet*) has ordered the following formula for some time past, in which anise fruit is substituted instead of the fennel, and one-fourth part of ginger is added. The altered formula runs thus: Senna and liquorice-root, of each 2 parts; anise fruit and sulphur, of each 1 part; sugar, $5\frac{3}{4}$ parts; ginger, $\frac{1}{4}$ part. This altered preparation is quite as satisfactory in its laxative properties, is less liable to gripe, and is as pleasant to take as the official powder, and he would suggest its trial in cases where the powder as now prepared produces the disagreeable effects to which he has referred.—*Boston Med. and Surg. Journ.*

TREATMENT OF GOITRE.

The injection of goitre with 5 drops of Fowler's solution twice weekly, and the daily exhibition of 5 drops of the arsenical solution and 12 grains of potassium iodide internally, is the treatment recommended by EICHBERG in *Les Nouveaux Remèdes*, November 24, 1886.

THE CAUSE OF CIRCULAR GASTRIC ULCER.

DR. SILBERMANN, of Breslau, has lately made some experiments on dogs for the pur-

pose of showing that the kind of anæmia characterized by deficiency of hæmoglobin in the red corpuscles of the blood is peculiarly favorable to the production and maintenance of circular ulcers of the stomach. Hæmoglobinæmia was produced by injection of various substances, and then either chromate of lead was introduced into a small gastric artery, or a ligature was applied to it, or the internal surface of the stomach was abraded by means of an œsophageal sound carrying a guarded point. All these animals were found to have contracted gastric ulcers, and it appeared to make no difference whether the hæmoglobinæmia was produced before or after the stomach was injured. With the microscope it was found that a number of the red corpuscles were of a very pale color, and that the blood was less alkaline than normal, which is explained by the experiments of Preyer, A. Schmidt, and Rollet, who have shown that hæmoglobin is a weak acid. Dr. Silbermann considers that in the anæmia of hæmoglobinæmia all the conditions are present which are required by various theories for the production of gastric ulcer,—namely, arterial anæmia (Klebs), venous hyperæmia of the gastric mucosa (Key), venous stasis in the hepatic vessels (Gunsberg), circumscribed hemorrhages (Virchow), and, lastly, diminished alkalinity of the blood (Leube).—*Lancet*, October 23, 1886.

TREATMENT OF ECZEMA IN CHILDREN.

Eczema in children is very successfully treated by WIDERHOFER with a five per cent. lanolin and bismuth salve. This is thickly spread upon linen, and bandaged upon the part morning and night. Lanolin forms but a small amount of fatty acids upon the skin, while vaseline and other fats readily produce fatty acids, which to the child's sensitive skin are very irritating.—*Allg. Wiener Med. Ztg.*, No. 32, 1886.

MYTILOTOXINE.

Numerous attempts have been made to effect the isolation of the poisonous principle in mussels. M. Salkowski has extracted by means of alcohol some harmful products, at present undetermined. The action of these products, however, recalls slightly the action of curare. M. BRIEGER (*Deutsche Med. Wochens.*) has succeeded in isolating this harmful principle, which he calls mytilotoxine, and at the same time several other bases, some

being harmless, while others are poisonous. These bases are precipitated after extraction with acidulated water or with alcohol by phosphomolybdic acid, perchloride of platinum, etc. One of the inoffensive bases appears to belong to the choline series; another, injected under the skin of small mammalia, produced salivation and profuse diarrhoea. Mytilotoxine is the most important of these bases: its composition ($C_8H_{10}NO_3$) M. Brieger has been able to determine possesses certainly the properties of curare, already recognized by Schmidtman, Virchow, and Salkowski. A fourth basic product is precipitated by gold perchloride in the form of an oil. It is very poisonous. Animals poisoned by it remain as though rooted to the ground, and succumb after a few convulsive movements. Lastly, M. Brieger points out a body with a detestable smell, recalling that of cacodyl. The greater part of these compounds appear to belong to the class of the ptomaines, and this specific principle disappears on distillation with carbonate of sodium, a fact announced by Salkowski. From this observation the following practical result arises: that decoctions of mussels may be rendered inactive by the addition of a little carbonate of sodium (three grammes to three and one-half grammes per litre of water), but the alkaline salt must be added while the mussel solution is boiling; in the cold solution it is inert, and is not, therefore, a true antidote. The action upon the muscles themselves is identical; boiling carbonate of sodium renders them harmless, at least to a certain extent.—*Druggists' Circular*, November, 1886.

A CURE FOR WARTS.

Take 15 grains of corrosive sublimate and dissolve in 1 ounce of collodion. Brush the warts carefully once a day with this solution. This remedy is more efficacious and more convenient than other recommended procedures.—*Zeitschrift d. Oester. Apotheker-V.*, September 20, 1886.

BINOXIDE OF MANGANESE IN AMENORRHOEA.

The effects of manganese in stimulating the menstrual flow, when its suspension is not due to pregnancy, have been fairly established by trials extending over nearly eighteen months. In the articles contributed to the medical journals on the subject, at the beginning of last year, the permanganate and the binoxide

were both mentioned as possessing emmenagogue properties; but experiments have so far been made almost exclusively with the permanganate. In consequence, however, of certain disadvantages which are apt to attend the administration of this salt, unless several conditions are complied with, aided, perhaps, by theoretical notions as to the transformation which so unstable a body may undergo immediately after being swallowed, the binoxide, which is equally potent and less irritating, has latterly come into favor. Manganic dioxide, it is true, has been described as possessing no therapeutical value; but it is conceivable that if its effects are limited, even approximately, to the menstrual function, they may have escaped the attention of observers, especially if, as is not improbable, their investigations were confined to men or animals.—*Brit. Med. Journ.*, December 4, 1886.

HOW TO PRESCRIBE HYOSCINE.

CLAUSSEN, in the *Zeitschrift für Therapie*, September 1, 1886, recommends the following formulas for the hypodermic and internal employment of hyoscine in asthma, whooping-cough, neuralgia, epilepsy, and paralysis agitans:

- R Hyoscini hydrobromici s. hydroiodici, gr. $\frac{1}{4}$;
Solve in aqua destillata, fʒiiss.
S.— $\frac{1}{4}$ to 1 syringeful for subcutaneous injection.
- R Hyoscini hydrobrom. s. hydroiod., gr. $\frac{1}{4}$ to $\frac{1}{2}$;
Aq. dest., fʒiiss;
Syr. cort. aurant., fʒi. M.
S.—Take a teaspoonful once or twice a day.

TAPIOCA-ROOT AS AN ANTISEPTIC.

A remarkable substance, which is possessed of powerful antiseptic properties, has been extracted by Dr. Peckolt from the roots of the tapioca-plant. To this the name of sepsicolytin, or fermentation-hinderer, has been given. A very small quantity, mixed with fresh albumen, is said to preserve it for upward of six months without deterioration. As this principle is in all probability present to a considerable extent in the well-known "cassareep" of the West Indies, it is obviously not poisonous. The possibilities of use for an antiseptic free from injurious action on the system are very great, both from a culinary and medical point of view. Its action on putrid fevers, and in all diseases in which albuminous changes take place rapidly, seems worthy of investigation.—*Provincial Medical Journal*, November 1, 1886.

— THE — Therapeutic Gazette.

Whole Series,
Vol. XI.

Detroit, February 15, 1887.

Third Series,
Vol. III. No. 2.

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Original Communications.

CLINICAL LECTURE ON PAINLESS ENLARGEMENTS OF THE LIVER IN CHILDHOOD.*

BY LOUIS STARR, M.D.

GENTLEMEN:—Murchison, in his work on hepatic diseases, very aptly divides the affections of the liver attended by an increase in size into two classes,—the painless and the painful. It is my intention in this lecture to call your attention to the first class,

* Reported by Dr. Wm. J. Taylor, Physician to Children's Dispensary, Hospital of the University of Pennsylvania.

which is the more common in children, and which embraces amyloid degeneration and fatty infiltration of the liver. First let us study:

1. *Fatty Infiltration of the Liver.*—"Fatty liver" is a condition in which the enlargement is due to an accumulation of oil in the hepatic cells. A liver so diseased is increased in all its dimensions, its surface is yellowish and oily, its margins rounded, and its texture doughy. On section, the cut surface is distinctly yellow, mottled with brownish-red spots, and, if a bit be put under the microscope, abundant granules and globules of fat can be seen.

The little negro boy before you is about 3 years old, and has been a patient in the Children's Hospital for the past three months.

During this time he has suffered with severe cough; has had a temperature which, as you see by the chart, has oscillated markedly, ranging from 99° or 100° F. in the morning to 104° or 105° F. in the evening, and has lost strength and flesh rapidly. No previous history of value can be obtained, for his mother, who is a prostitute, left him to the tender mercies of chance friends, and knows little or nothing about him. He comes before you now, presenting a miserable spectacle. His face is pinched, and shows the imprint of severe illness. The lips are cracked and ulcerated, marking great impairment of nutrition, a fact still further manifested by the wasted thorax and limbs. From the latter all the flesh seems to have disappeared, and the investing skin hangs about the bones in loose inelastic folds. The abdomen alone appears to be unaffected by the general wasting, and by its prominence stands in marked contrast to the emaciated frame.

The general symptoms may be stated in a few words. They are fever, profuse night perspirations, harassing cough, accelerated breathing, rapid and feeble pulse, impaired appetite, thirst, and irregular bowels. There is no oedema, the conjunctivæ are pearly-white, and the urine is unaltered in composition.

To begin the physical examination with the lungs, as the cough and quickened respiration point to them as the seat of the disease, you perceive that there is greatly impaired resonance on percussion over the upper third of the right lung, and auscultation reveals the signs of a small cavity immediately below the clavicle, with broncho-vesicular respiration, and subcrepitant râles over the rest of the dull area. Over the remainder of the right and the whole of the left lung there is hyper-resonance on percussion, and exaggerated puerile breathing on auscultation. The heart, beyond rapidity of action, presents nothing abnormal.

Passing next to the abdomen, note that while the whole region projects markedly, the greatest bulging is at the upper half. In this position the fingers of the palpating hand distinctly detect a solid, smooth mass beneath the integument, which extends upwards to the costal border and downwards to the level of the umbilicus. The lower border is somewhat hard to find, as it seems to fall away from the parietes, but on careful manipulation it can be grasped by the fingers, and is rounded and soft. On tracing this from right to left, one can distinctly mark out an outline exactly

resembling that of the right lobe of the liver; while here, a little to the left of the meridian line, is the notch between the right and left lobe, and still more to the left, the margin of the left lobe. To further prove that this mass is an enlarged liver, the dulness over it is continuous with the usual liver dulness, and the upper margin of the latter extends nearly an inch higher than in health. The abdomen below the tumor gives the ordinary tympanitic note on percussion, and is soft and flexible to palpation. There is no enlargement of the spleen. It is particularly to be observed that during the whole of the abdominal exploration the child has evinced no signs of pain nor tenderness. Now, all of these features are characteristic of fatty infiltration of the liver.

The case before you, therefore, is one of tuberculosis with associated fatty liver.

The pulmonary disease undoubtedly antedated and induced the hepatic enlargement, and I think you will be able to trace this etiological factor in the majority of cases occurring among children. The causes, however, may be divided into two classes,—first, the over-use of farinaceous food, which induces a physiological and transitory infiltration of the liver, the excess of hydrocarbons supplied from without being deposited in the cells in the form of fat; second, chronic wasting diseases, such as *tubercle*, *scrofula*, rickets, caries of bone, chronic intestinal catarrh, and syphilis. Here the fat is absorbed from the subcutaneous and other fat-forming tissues of the body, and the process is pathological.

The rational symptoms, as exemplified in the present instance, belong usually to the causal affection rather than to the hepatic disease. In fact, the latter has no especial symptoms, except disturbance of the functions of the stomach and intestines due to obstruction of the portal circulation; the features of associated fatty changes in the heart and kidneys, that so often direct attention to, or confirm the existence of, similar lesions of the liver in adult life, being of rare occurrence in childhood. Symptoms, therefore, are little to be relied on.

The physical signs so readily elicited today are, on the contrary, quite characteristic. Unfortunately, they are fully developed only in well-matured cases. For, while uncomplicated fatty infiltration of the liver is always attended by an increase in bulk, we may fail to detect a moderate alteration on account of the tendency the organ has, from its softness, to fall away from the abdominal wall.

Understand, then, that the presence of this disease may be absolutely asserted when a tumor, having the outline of the liver, can be felt in the abdomen; when this tumor has a blunted edge, is soft and painless; when the percussion-dulness over it is continuous with the normal liver-dulness; and when there is neither enlargement of the spleen, ascites, nor jaundice. Without these features there must always be uncertainty, and sometimes the lesion is not even suspected until the viscus is exposed on the post-mortem table.

The diagnosis between fatty and amyloid liver is best tabulated as follows:

FATTY LIVER.	AMYLOID LIVER.
Increase in size; the lower margin of right lobe rarely extending lower than the level of the umbilicus.	Increase in size; the lower margin of right lobe often extending down to brim of the pelvis.
Tumor soft, smooth, and doughy.	Tumor smooth but very hard.
Edge blunted, and receding from abdominal wall.	Edge sharp and prominent, often pushing forward the parietes in a visible ridge.
No pain nor tenderness.	No pain nor tenderness.
Spleen normal in size.	Spleen enlarged and hardened.
Impaired gastro-intestinal digestion.	Vomiting and diarrhoea from amyloid degeneration of the mucous membrane of the gastro-intestinal tract.
Urine usually normal.	Urine albuminous, with hyaline tube-casts from amyloid degeneration of the kidneys.
Anæmia.	Anæmia and sometimes œdema of feet and ankles.
No ascites.	No ascites.
No jaundice.	No jaundice.
Usual cause: tuberculousis.	Usual cause: protracted suppuration.

In very exceptional cases, jaundice and ascites are met with in both forms of disease. They depend upon enlargement of the glands in the fissure of the liver, due in the one case to caseous or tubercular, and in the other, to amyloid degeneration.

The prognosis depends upon the cause. If the enlargement be caused by an excess of farinaceous food, regulation of the diet soon produces a reduction in bulk, but when it occurs during the course of a protracted wasting disease, dangerous impairment of nutrition is indicated.

As already stated, then, when fatty liver depends upon dietetic causes, proper feeding is all that is required for its removal. In other cases, the only successful treatment is one directed against the originating disease. So

far as the liver itself is concerned, the plan of management is to exclude all starch and fat from the food; to insist on warm clothing, fresh air, and sunlight; to correct dyspeptic symptoms by the administration of alkalies with bitters; to relieve constipation by mild laxatives; and to restore the crasis of the blood in anæmia by the use of some acceptable preparation of iron.

2. *Amyloid Degeneration of the Liver.*—The little patient before you is 8 years of age. He has been an inmate of the Children's Hospital for over three years, and during this time has been treated for suppurative disease of the right hip-joint. He is very anæmic and much emaciated, suffers from attacks of vomiting and diarrhoea, has slight œdema of the ankles and feet, and his urine is highly albuminous and contains numerous hyaline casts. The abdomen is, as you see, very prominent, and on physical examination the liver is found to be immensely enlarged, the lower edge of the right lobe extending quite to the brim of the pelvis; the spleen is also greatly increased in size, and both organs feel firm and dense to the palpating fingers. There is no jaundice nor ascites, and no pain nor tenderness over the liver. There can be no question that this is a case of amyloid degeneration of the liver, with associated amyloid disease of the spleen, kidneys, and gastro-intestinal mucous membrane.

The albuminoid or amyloid liver occurs as a factor in general amyloid degeneration, and is not infrequently met with in childhood. The disease consists in a complete or partial infiltration of the liver-cells by a peculiar translucent, refracting substance, possessing the property of fixing iodine, and assuming a mahogany-brown color, which, upon the application of sulphuric acid, changes to blue, green, violet, or red. This infiltration begins in the hepatic arterioles and capillaries, and at first is limited to the middle zone of the lobules; it then extends to the periphery and centre, destroying the normal elements of the cells, and converting them into irregularly-shaped, glassy-looking masses; with this condition fatty infiltration is sometimes associated.

There is uniform enlargement of the liver; its density is increased; the color is yellowish-gray; the peritoneum is smooth and shining, and the edges are thin and well defined. On section, dry, homogeneous, glistening surfaces are exposed.

The spleen, kidneys, and lymphatic glands are frequently similarly altered, and at times,

also, the mucous membrane of the stomach and intestines.

Amyloid degeneration of the liver is always produced by some chronic disease, attended by suppuration and purulent discharge. Suppurative diseases of the bones and joints, scrofulous abscesses, empyema with a fistulous opening in the chest-wall, dilated bronchi with copious muco-purulent expectoration, chronic pulmonary tuberculosis, and constitutional syphilis are the most frequent causes. It may occur at any age, but is more frequent after the fifth year, and in boys than girls.

The rational symptoms are those of the originating disease. There is no pain nor tenderness in the hepatic region; there is absence of jaundice, distention of the superficial abdominal veins, and ascites. If, however, the glands in the fissure of the liver be at the same time enlarged by waxy deposit, the pressure exerted upon the portal vein and bile-duct will cause jaundice, distention of the superficial abdominal veins, and ascites. The patient may complain of weight in the hypochondrium, and is always weak, wasted, and anæmic, with pale, sallow skin, clubbed fingers, and œdematous feet and ankles. If the kidneys be involved, the urine is increased in quantity, has a low specific gravity (about 1014), is light lemon-colored, and contains albumen, and at times hyaline tubercasts. The dropsy of the lower extremities is due in great measure to this complication, and when the intestinal tract becomes involved there is a tendency to vomiting and diarrhoea.

The physical signs are characteristic: the abdomen is prominent, especially over the upper third, and both percussion and palpation show the liver to be very greatly and uniformly enlarged.

The upper margin of dulness is higher by an inch or more than is normal, while the lower edge of the right lobe is somewhat blunted, but perfectly well defined, and can often be felt below the level of the umbilicus, even, as in the present case, at the brim of the pelvis. The portion uncovered by the ribs feels very dense and firm, and perfectly smooth, except where broken by the natural fissures.

The spleen can often be detected projecting from beneath the left costal border. The absence of splenic enlargement is, however, no proof against the existence of amyloid changes in that organ, as in some few cases there is no appreciable alteration in size.

The course of the disease is chronic.

The diagnosis is not difficult, and is readily made from the physical signs furnished by the liver and spleen, the absence of jaundice and ascites, the previous history of cachexia and suppuration, the character of the urine, the anæmia, and the gastro-intestinal symptoms.

Congestion of the liver, with consequent enlargement, has an entirely different history, rarely occurring in cachectic or anæmic cases. A fatty liver, while large, is soft and yielding to the touch, and is unattended by increase in the size of the spleen or albuminuria.

The prospect of ultimate recovery is better in children than in adults, for, provided the cause of the degeneration can be removed, it is quite possible for the liver to return to its normal dimensions and to an apparently healthy condition, through the active reparative power always present in early life. Nevertheless, amyloid change in the liver adds greatly to the danger of the originating disease, and is fatal in most cases.

In the matter of treatment it is hardly necessary for me to say that attention must first be given to the amelioration or removal of the cause. It is more difficult to cure the disease when once developed than to prevent it by checking chronic suppuration, removing carious bone, healing diseased joints, energetically treating constitutional syphilis, and building up the health in cachectic subjects.

To combat the disease itself, the diet must be as nutritious as possible, taking care that the powers of digestion be not overtaxed, and a moderate quantity of alcoholic stimulants must be taken daily. The child must be clothed so as to prevent all chilling, and must live as much as possible in the sunlight and open air, or, if confined to the house, in a bright, airy room. Alkalies, iron, and iodine are the most useful drugs. Of alkalies, the chloride of ammonium is the best, and it may be given in combination with a bitter. The following prescription answers very well in these cases:

R Ammonii chloridi, ʒii;
Infus. gentianæ comp., fʒiii. M.

S.—One teaspoonful four times daily; for a child six years old.

It is often well to combine iron with the ammonium salt; for example:

R Tinc. ferri chloridi, fʒi;
Ammonii chloridi, ʒii;
Infus. calumbæ, q.s. ad fʒiii. M.

S.—One teaspoonful three times daily.

The iron may also be given in the form of a modified Basham's mixture :

R Tinc. ferri chloridi, ℥i;
Acidi acetici dil., ℥iiss;
Liq. ammonii acetatis, ℥x;
Elix. aurantii, ℥v;
Syrupi, ℥i;
Aquæ, q.s. ad ℥vi. M.

S.—One tablespoonful four times a day.

When there is kidney complication with œdema, this formula is particularly useful.

Iodine is most efficient if there be a syphilitic taint. It may be given in the form of iodide of potassium, 5 grains or more three times a day, with a bitter infusion, or liquor iodinii comp. can be employed in doses of 2 drops, well diluted, three times a day.

The complications must be met as they arise. Vomiting, by ice, Apollinaris water, bismuth, and counter-irritation of the epigastrium; diarrhœa, by the vegetable astringents, combined with small doses of opium; and dropsy, by diaphoretics and diuretics.

DIET IN FEBRILE MALADIES.*

BY PROFESSOR DUJARDIN-BEAUMETZ, Paris, France.

GENTLEMEN:—If I were to attempt to give a full history of the subject of which I am to speak to-day, one lecture would hardly suffice for all the details, or even to indicate the various phases through which this vexed question of hygienic therapeutics has passed. I shall, then, call your attention only to the principal points of historical interest connected with the dietetics of fevers.

For long ages the medical world followed scrupulously the rules pertaining to diet in febrile diseases so remarkably set forth by the Father of Medicine. In the treatise which he has devoted to this subject, Hippocrates expresses himself thus: "Doubtless in cases where there is much enfeeblement, resulting from pain and acuteness of the malady, it is a great mistake to give the patient large quantities of drinks, ptisans, or alimentary substances, with the idea that the debility is due to the emptiness of the vessels, but it is a mistake, also, to lose sight of the fact that a fever patient is weak by inanition, and to make his state worse by starving him." He adds, with much good sense and discernment, "If, under such circumstances (where the patient has been subjected to a starvation diet), some friend or

neighbor, wholly unacquainted with medicine, comes in and recommends nourishing food and drinks, despite the doctor's orders, he will often greatly benefit the patient, and may even get the credit of a cure. It is such cases as these that bring reproach upon the physician, the new man who prescribes food, whether a physician or a layman, receiving praise for having wrought an astonishing cure."[†]

Galen, Celsus, Ætius, Paulus of Ægina, followed rigidly, with comments of their own, the precepts of Hippocrates, which were summed up in these words: "When you have an acute inflammatory or febrile disease to deal with, you must treat it by a rigorously low diet." At the same time complete abstinence was not enforced, for physicians of Hippocrates's school were in the habit of administering in the acute stages of disease a plentiful supply of infusion of ground barley, which has given to ptisans their generic name (*πτισανή*, ground barley). The medical men of antiquity rarely broke through these traditional rules. One of the most curious of these infractions is that of Petronius, who allowed febricitants meat, for which Galen bitterly reproached him.

But towards the end of the eighteenth century (in 1780), when Brown gave to the world his "*Elementa Medicinæ*," which was destined to revolutionize medical practice, the doctrine of Hippocrates relative to the dietetic treatment of fevers underwent modification. Regarding almost all acute febrile diseases as asthenic affections, the Scotch reformer counselled in their treatment a stimulant and tonic regimen in which food played an important part. These views found a fitting soil in England; they were welcomed also in Scotland, and long afterwards we find Graves successfully defending Brown's doctrine, and showing the danger of abstinence in fevers. He, in fact, considered this position which he had taken respecting diet in fevers as such an important factor of his medical career that he is said to have desired to have this inscription on his tombstone: "*GRAVES FED FEVERS*."

In France for many years the doctrine of Brown found few partisans; Broussais's physiological system was in fashion, and opposed an invincible barrier to it. Considering all febrile diseases as dependent on gastro-intestinal irritation, the ardent reformer of Val de Grâce, more severe than Hippocrates, condemned his fever patients to absolute ab-

* A lecture on Alimentary Therapeutics.

† Hippocrates, "On Regimen in Acute Diseases."

stinence. Ignorant of the fact that at the terminal periods of continued fevers the nourishment which these patients at that time require provokes a physiological fever (*febris carnis*), as Bordeau had before observed, Broussais would rigorously remand to low diet or entire abstinence the poor patients who experienced the least febrile return as a result of the first ingestion of food, and it may now be affirmed, without fear of contradiction, that this practice, as judged by its fruits, was most disastrous.

When, at length, the medical profession in France had advanced sufficiently to throw off the yoke imposed by the school of Broussais, more rational views as to the dietetic treatment of fevers began to prevail; the starvation regimen of Broussais was repudiated, and, despite the earnest endeavors of Forget, who took a vehement stand against these "fever-feeders," as he called them, and who naïvely wrote that there was something better to do than to *feed* fevers,—namely, to *cure* them, the great majority of physicians recognized the dangers of abstinence in febrile maladies; the bed-sores so often witnessed in typhoid patients, with other untoward incidents, were laid to the charge of poverty of alimentation,—*i.e.*, were attributed to the abstinence to which the patients had been subjected.

The contest was carried on with ardor by such men as Marotte, Trousseau, and Herard, and in a remarkable discussion which was held almost thirty years ago (in 1857), at the meeting of the Society of the Hospitals, all present were agreed in acknowledging the necessity of feeding persons suffering from febrile affections. If Trousseau, by the eloquence of his teaching, by the charm of his manner, and his personal magnetism, was the most popular advocate of this new mode of alimentation, it must be remembered that it was Monneret who the most boldly carried it out. He was in the habit of ordering broths, vinous lemonade, wine of quinine, and Bagnol's wine for his typhoid patients, and would make them take as much as six quarts a day of nutrient and stimulating drinks.

Note, also, that several years before the prize Corvisart was awarded to a work of Duriard on abstinence in acute diseases, the conclusion of which was as follows: "Abstinence has no influence on the progress of acute diseases; it neither modifies their march nor their manifestations." Thus far only clinical observation had been invoked in favor of or in opposition to a generous ali-

mentary regimen in febrile disorders; but latterly new means of investigation have been put in exercise, and we shall presently see what support these have furnished to either the one or the other of the conflicting views which the medical world has entertained.

To give method to my exposition, I shall first examine the modifications which the febrile process effects in the functional operations of the digestive tube, and in nutrition.

As far as the functions of the digestive tube are concerned, all observers are agreed that typhoid fever profoundly modifies the secretions of the alimentary canal. In experiments made on individuals, the subjects of a gastric fistula, it has been again and again remarked that one of the first symptoms of this fever was marked diminution of the secretion of gastric juice, and even a decided change in the composition of this fluid. It is the same with the other secretions of the digestive tube.

But the most important point is that when you examine the condition of the intestinal mucous membrane in certain fevers, as typhoid fever, the modifications in the functions of this mucosa are still more pronounced. In this disease, in fact, the entire net-work of lymphatics is affected; the mesenteric glands are inflamed, so that the functional operation of the lacteals is profoundly perturbed, and the absorption of emulsified fatty substances and of peptonized albuminoid aliments cannot be effected in the greater part of the small intestine and in the large intestine. Drinks only can penetrate the economy by the venous plexuses of the portal vein.

The question of nutrition is also one of prime importance. I cannot here enter into a general description of the phenomena which characterize fever. Suffice it to say that we know by the examination of the urine on the one hand, and that of the gases of respiration on the other, that the febrile hyperthermia results either from a more active disintegration of the organism, with diminution of the combustions, or from an exaggeration of the combustions. The first theory is held by those who take for their basis the cellular theory of nutrition, and who consider urea as a breaking up of albuminoid substances; the second is held by those who accept as true the views of Liebig, and who regard urea as the direct result of organic combustions.

We have, moreover, a direct proof when we examine the loss of weight of fever patients. In a very interesting thesis, unfortunately in-

complete, by Thomas Layton,* you will find precious indications concerning this loss of weight in different febrile processes. In typhoid fever the mean loss of weight is 238.672 grms. per day; in pneumonia it is 387.6 grms.; in acute articular rheumatism, 386.8 grms. These averages have only a relative value. What it is important to know is the march of this loss of weight in the course of a continued fever. This is what Thomas Layton has not shown very conclusively, and I must protest against one of his affirmations, that in acute febrile maladies the loss of weight is uniformly descending.

You know that from a clinical point of view this is not the case in typhoid fever, where we see the patient preserve, at least in appearance, his ordinary plumpness, to emaciate with extreme rapidity during the first days of his convalescence. The observations, far too few, made by Lorraine, with the help of the scales, do not permit us to decide this question definitely.

Therefore I propose to take up anew this question by instituting daily weighings of my typhoid fever patients, and by comparing the temperature, the urea-production, and the diminution of weight. This is a work of no little magnitude, which will require a long time, but which will enable me, I believe, positively to demonstrate that in typhoid fever the denutrition does not follow, as Monneret and Layton think, a uniformly descending course, and that, on the contrary, it is vastly more pronounced at the decline of the febrile process and in the first period of convalescence.

But this is only one aspect of the question. There is another which presents still greater interest,—namely, the ascertainment of what becomes of the products which result from the disintegration of the organism. This point has been particularly well studied recently by our colleague, Albert Robin. This clinical experimenter has shown us that these products of disintegration accumulate in the economy, and to such an extent that you will find, for instance, in the blood of typhoid patients as much as seven and even nine per cent. of extractive matters, while in the normal state the proportion does not exceed four or four and one-half per cent. The extractive matters are eliminated chiefly by the urine, but also by the fæces and perspiration;

and the mildness or gravity of the fever depends on the greater or less facility with which this elimination goes on. There are even at certain moments *periods of discharge*, during which the economy eliminates immense quantities of these extractive matters. These are the “crises” which we witness in the course of continued fevers.

But these extractive principles which thus accumulate in the blood, and which result from the disintegration of the organism, are not the only toxic principles which poison the economy in continued fevers. We are obliged to add the ptomaines and the leucomaines, which take their origin, on the one hand, from septic processes which go on in the digestive tube, and on the other from the presence there of micro-organisms or bacilli. Bouchard and Lépine have clearly shown by the examination of the urine of typhoid patients and its toxic effects the presence of these different products. Thus it is that Lépine has demonstrated that in the normal state the organic matters (products of disintegration) compose but fifteen per cent. of the total toxic ingredients of the urine, while in the febrile state the proportion is as high as forty-five per cent.

From all that goes before, it results, then, that in febrile processes, and in particular in typhoid fever, the digestive tube is not in a fit condition, on the one hand, for the absorption of albuminoid matters, and, on the other hand, the products of organic disintegration accumulate in the system and produce toxic phenomena.

What can be the rôle of alimentation in such cases? Dietetics have a very limited rôle, because only substances which are liquid and charged with salts can penetrate the economy, while albuminoids and fats find in the altered state of the lacteals a serious obstacle to their absorption. In the case which we have under supposition, of typhoid fever, the fatty and albuminoid principles will be furnished, not by the food ingested, but by the individual, who will consume his own fat and muscles.

Reduced to this simple question of the penetration of saline and aqueous matters, diet does not the less play a considerable part in the course of febrile maladies, on condition, however, that the food administered shall be of a liquid nature. The milk and broth which we give to typhoid patients allow us to introduce, on the one hand, a large quantity of water, and, on the other hand, salines in considerable amount. In typhoid

* Layton, “Clinical Study on the Influence of Causes which alter the Bodily Weight of the Adult Sick Person.” (*Thèse de Paris*, 1868.)

fever, as Albert Robin has well shown, there is a veritable *mineral inanition*, resulting from the daily losses in potassium, in sulphuric acid, in phosphoric acid, and in chloride of sodium,—losses which take place by the urine, and which amount to 3 or 4 gms. of chloride of sodium, 1.50 gms. to 2 gms. of phosphoric acid, 2.967 gms. of sulphuric acid, and 1.730 gms. of potassium. If you will now refer to the analysis of broth which I gave you in one of the first lectures, and which I here repeat, you will see how well this analysis corresponds to the incessant losses of typhoid patients in saline matters :

	Per 1000.
Water.....	985.600
Solid organic substance, desiccated at 20° C. in a dry vacuum.....	16.917
Soluble salts, chlorides, phosphates, and sul- phates of potassium and sodium.....	10.720
Salts slightly soluble, phosphates of magnesium and lime.....	0.539
	1031.780

Can the same be affirmed with regard to milk? Yes, to a certain extent. By the water and the saline substances which it contains, and which strikingly resemble those of serum, milk responds well to the indication for a liquid and saline nourishment in febrile maladies. But milk contains albuminoids and fats besides. What rôle do these ingredients play? Do they act as food, or are they rejected without being absorbed? We are entirely ignorant; and careful experiments, made with the scales, between typhoid patients fed exclusively with broth and such as have been fed exclusively with milk, will alone enable us to solve this question. For myself, I believe that milk does good in febrile maladies only by the water and saline substances which it contains.

If the saline principles which enter into the composition of foods are suitable for repairing the incessant saline losses of fever patients, the water which is a part of these same aliments answers quite another end,—namely, that of promoting elimination by the urine of the extractive matters accumulated in the economy. This end will be fulfilled not only by the aqueous foods, such as broth and milk, but also by the ptisans, at the head of which we must place lemonade, and this not only by reason of its agreeable taste, but also because quite special antifebrile properties have been attributed to the lemon.

The Arabian physicians, and in particular Isach-Ibn-Amrem, have since a remote period pointed out the advantageous action of lemon-

pulp in fevers; and Maglieri, who has lately made trials of this simple remedy in Italy, affirms that the decoction of lemon is equal, if not superior, to quinine. Without going as far as this, one may admit that lemonade fulfils a useful rôle in fevers by introducing water and certain saline principles. But there is a point which ought to arrest our attention a little longer. I refer to wine and the alcohols.

Wine and alcohol have been for ages utilized in the treatment of acute diseases, and in the works of Hippocrates we find frequent allusions to the employment of wine as a tonic and stimulant. But it must be remembered that it is only within the last twenty-six years—that is to say, since the publication of Robert Bentley Todd's classical work,—that alcohol has been methodically employed as a part of the routine treatment of inflammatory and febrile diseases. Todd, in the propositions which he lays down with reference to acute diseases, maintains that the duty of the physician is to find the best means for supporting the vital forces in acute diseases whose natural evolution is towards cure. According to Todd, there is no means for sustaining the vital forces so efficacious as alcohol.

My regretted master, Behier, was one of the most earnest advocates of Todd's method, and it was soon the fashion in France to treat all acute inflammations, such as pneumonia, by alcoholic stimulants. Jaccoud has given in this regard some statistics borrowed from Bennett, which are very favorable to this kind of treatment, out of one hundred and twenty cases of pneumonia the mortality being but about three per cent. In cases of treatment by pure expectancy, the mortality rose to 7.4 per cent., and this was strikingly contrasted with a death-rate of from sixteen to thirty-four per cent. in pneumonias treated by blood-letting and tartar emetic.

This same method has been applied to the therapy of fevers. Fourrier, of Compiègne, showed us in 1873 the good effects which he had derived from alcoholic stimulants in typhoid fever.* Burdel, moreover, has called our attention to the advantages of wine in malarial fevers, and curious instances have been mentioned of individuals affected with intermittent fever rebellious to all other means of treatment, who were cured by dosing them freely with alcohol. Todd had observed similar cases.

To-day, now that the enthusiasm which was

* Fourrier, *Bull. de Thér.*, t. 85, p. 241.

at first awakened by the publication of Todd's views and the results of his practice has subsided, there is, nevertheless, unanimity in recognizing the great advantages of the alcoholic medication in acute febrile maladies. It is more especially in the adynamic forms of these affections that the alcohols are indicated. They also give excellent results in the two extremes of life, infancy and old age. In infancy, as our colleague, Gingeot,* has well shown,* alcohol is remarkably well borne, and gives the best results in the treatment of pneumonia; this is also the case in old age. Add, lastly, that in the case of persons addicted to the free use of alcohol, when they are attacked by acute diseases, grave symptoms are almost sure to supervene if the usage of alcoholic stimulants is abruptly suppressed, and we see the necessity in such patients of maintaining the treatment instituted by Todd.

To sum up, then, it is in fevers of an adynamic kind, in the extreme periods of life, and in patients of intemperate habits, that we find the three great indications for the use of alcohol in febrile maladies.

If everybody is agreed in recognizing the good effects of the tonic medication in these diseases, this unanimity ceases when we endeavor to explain what is the mechanism of this favorable action. Some, as Gubler, see in alcohol only a dynamic or force-giving medicament, which acts in fevers by sustaining and augmenting the vital powers. Others consider alcohol as an antithermic medicine, which brings down the temperature and opposes hyperthermia. Still others maintain (and among them Albert Robin) that alcohol opposes organic disintegration, while augmenting the quantity of oxygen inhaled; others, lastly, affirm that alcohol acts only as a food.

For my part, I have deeply studied this question of the physiological action of alcohol, and I believe that all these views are to a certain extent true, and that alcohol acts at once as a food, as a tonic, and as an antithermic; and it is this threefold action which explains its utility in the treatment of acute febrile maladies. I believe alcohol to be a food, and claim that it undergoes a more or less complete combustion in the organism; but this combustion takes place at the expense of the oxygen of the blood. On this account alcohol retards the organic combustions and lowers the temperature; in fact, as Marveaud

has maintained, it is a waste-restraining aliment. But it acts also unchanged on the nerve-centres, to which it communicates elements of strength and tonicity, and is a force-producer, as Gubler regarded it.

In our hospital practice we are much in the habit of prescribing alcohol, under the form of Todd's potion, which consists of equal parts of rum or cognac and the *potio diacode*. (The *potio diacode* may be conveniently replaced by sweetened water.—TR.)

In private practice I think that it is better to discard Todd's potion, and the various modifications thereof, and to substitute certain wines rich in alcohol, such as the Spanish, Portuguese, or Sicilian. These wines are much more agreeable than Todd's mixture. It is desirable to obtain such wines in their purity, which is easier far than to obtain pure brandy, the brandies of commerce being generally an artificial rather than a natural product.

To sum up, gentlemen, diet in febrile maladies, and, in particular, in typhoid fever, ought to consist of liquid substances, containing, besides the water of their composition, certain saline ingredients, tonic principles, and a very small percentage of albuminoid principles.

But this regimen should be rigorously observed, especially in the terminal periods of typhoid fever, at the moment when, with the subsidence of the fever, the patient enters into convalescence.

To repair the losses which prolonged inanition has inflicted on the organism, the fever patient, during the first period of convalescence, is possessed of an insatiable appetite, which causes him to devour everything offered him with avidity. He bolts his food whole, always craving for more. The result is, that the digestive tube is soon encumbered with a load of alimentary substances, which, in its weakened state, it is unable to digest; what with the irritation of the food, and the flatus produced by its decomposition, rupture of the intestines, with fatal peritonitis, is very likely to follow. This rupture is easily explained, when you think of the imperfectly cicatrized ulcers which exist in the ileum. Here, then, your earnest watchfulness ought to be exercised in enforcing extreme moderation in eating, and in permitting only such articles of food as are readily digestible, and are in a state which allows their speedy absorption, the daily rations being little by little augmented as the patient advances towards recovery.

† Gingeot, "Treatment of Pneumonia of Children by Alcohol." (*Thèse de Paris*.)

Such, gentlemen, are the indications which I desired to present relative to diet in febrile maladies. I have done with this first part of hygienic therapeutics. I hope that this study of alimentary hygiene has proved of some interest, and that continually in your practice you will be enabled to apply the precepts which I have laid down. But only a part of my task is accomplished. In another series of lectures I shall complete this subject of hygienic therapeutics by taking up gymnastics, hydrotherapy, balneotherapy, aërotherapy, and climatotherapy, and we shall find under these different heads topics of great interest, and presenting a real utility.

CRITICAL OBSERVATIONS AND EXPERIMENTAL STUDIES ON THE INFLUENCE OF PHARMACOLOGICAL AGENTS ON PERIPHERAL VESSELS.

BY PROF. R. KOBERT.*

(Continued from page 14.)

PART II.

RANKE† makes the following assertion: The walls of all vessels excepting the capillaries contain nerves which form a fine net-work under the adventitia. Also ganglionic cells have been discovered in the larger nerve-nets. According to W. Wundt,‡ the arteries and veins contain, like the heart, ganglia in their own walls which act as centres of innervation. Besides, they also receive their nervous supply from outside, and consequently depend, as far as their condition is concerned, on both an outward and an inward influence. The smaller arteries, in particular, are subjected to this double source of innervation.

According to Aubert,§ the statements of observers vary materially as to the microscopic behavior of the vascular nerves. Ganglia seem to have been observed only by Beale|| and Lehmann,¶ and by the latter exclusively in the vena cava of the frog. Arnold** has described and drawn a nerve-plexus, with nuclei and terminal nodes, in the muscular

coat of a small artery. Henocque†† described several plexuses on the arterial walls. One of these, the basic plexus, lies at the outer side of the tunica externa; another plexus, the intermediary one, lies in the tunica externa, is derived from the former, and contains nuclei, nodules, and ganglionic swellings; and, finally, an intramuscular plexus, which is derived from the former in the form of very thin fibres, and terminates in the muscles.

Gonjaew,‡‡ however, and, following his example, Gscheidlen, §§ found in the arteries only one net situated in the adventitia, and another one, connected with this, and situated in the muscular coat. Ganglionic cells could not be found by Gscheidlen, though he saw in the vena cava of the frog structures suggestive of ganglionic cells. The terminal reticula of the vaso-motor nerves in the capillaries have been described by Gonjaew and confirmed by Ch. Legros.¶¶

Rouget, Goltz, and the majority of the more recent physiologists, explain the dilatation of vessels, whenever it is independent of the blood-pressure, by the presence of a peculiar mechanism in them, which is allied to the inhibitory apparatus of the heart. In other words, they claim that there exists in the walls of the vessels a *special peripheral ganglionic apparatus which maintains the vessels constantly at a certain level of tension*. The nerve-tracts connected with these ganglia either increase the activity of the former, and thus contract the vessels, or inhibit—i.e., decrease—their energy, and thus produce a dilatation of the vessels. According to B. v. Anrep and N. Cybulski, this latter hypothesis is in perfect accord with all the established facts of anatomy and physiology.

The above quotations indicate that though the anatomists have not quite settled the question of the existence of these peripheral vascular ganglia, their presence is required from the physiological point of view. Goltz, with whom, when his assistant, I had often spoken of this subject, has somewhat modified his former view, inasmuch as he no longer insists upon the necessity of anatomically visible ganglia. He believes, however, that the walls contain some independent regulatory apparatus endowed with the power to dilate and contract the vascular lumen. And this

* Chief of the Pharmacological Laboratory at Dorpat, Russia.

† *Lehrbuch der Physiologie*, p. 408. ‡ *Ibid.*, p. 350. § Hermann's *Handbuch der Physiologie*, Bd. i. p. 403; Comp. Bd. iv. p. 422.

|| *Philos. Transact.*, 1864, p. 562.

¶ *Zeitschrift für Wissenschaftliche Zoologie*, xiv., 1864, p. 369.

** Stricker's *Gewebelehre*, i., 1864, p. 346.

†† *Arch. de Physiol. Norm. et Pathol.*, iii., 1870, p. 401. Vide, also, *Thèse de Doctorat*, Paris, 1870.

‡‡ *Arch. f. Mikrosk. Anat.*, Bd. xi., 1875, p. 479.

§§ *Ibid.*, Bd. xiv., 1887, p. 327.

¶¶ "*Des Nerfs Vasomoteurs*," *Thèse de Concours*, Paris, 1873, p. 327.

view I also hold myself. It cannot, of course, concern us here whether this regulatory mechanism refers solely to the muscular coat, or whether the tunica elastica and adventitia also participate in it.

It has likewise been a matter of discussion which portions of the circulatory system are subject to this contraction and dilatation of the lumen. Thus Eckhard speaks of an active dilatation of the *capillaries*. Again, other experimenters who have instituted investigations with digitalis and ergot, speak of a contraction of capillaries terminating in absolute disappearance.

I have never been able to distinguish any appreciable variations in the lumen of capillaries. On the other hand, all observers agree that *arteries* can contract and dilate, and that these variations of the lumen are particularly distinct in the smaller arteries. In veins a contraction has also been noticed by a few observers. At the exhibition of certain agents, of which I shall speak below, I have invariably seen this contraction, and feel disposed to interpret this phenomenon as an active change.

Speaking of the calibre of vessels, I wish to mention still another appearance which manifested itself in every experiment. As soon as the canules were fastened and the transfusion began, all vessels at first became filled and turgid, and the organ assumed a highly sanguineous appearance. The vein also carried a copious stream, which was only from time to time interrupted by a larger coagulum, which had to be expelled. In this stage the organ had not yet attained complete vitality. As soon, however, as the temperature of the blood has been reached, a great contraction of all vessels is suddenly seen to set in, pallor takes the place of ruddiness, and the venous flow decreases considerably. This stage of active contraction has to pass off first before a regular flow and the beginning of measurement can be thought of.

As to the *quantity of the blood flowing off in a unit of time* (a minute), I found this to vary materially, according to the nature and the size of the organ. On isolated portions of a rabbit's uterus the quantity, of course, was very small, amounting frequently to less than 1 c.c. On the hind part of a dog or the kidneys of a horse the quantity was often less than 100 c.c. And on account of these great variations it is of little value to state on the record the absolute figures obtained from minute to minute. This would only render a comparison of the single trials more difficult.

I have, therefore, only stated how many per cent. the off-flowing quantity changed when the height of action of the single agents had been reached. As can be seen by a glance at the accompanying charts, this change was very trifling in some agents, and, again, quite enormous in others. In another column it is stated *how many milligrammes of the pharmacological agent had passed altogether*. Another column contains the *concentration of the latter in the blood, calculated for one litre*. Besides, it is also stated *how many minutes* the poisoning had lasted. All other statements of the charts speak for themselves.

Many readers of this paper will, after inspection of these charts, probably ask why with a number of pharmacological agents I had only instituted one or two experiments, which, of course, must be entirely insufficient to definitely settle the question of the influence of these agents on the blood-vessels. In reply to such queries I would say that experiments of this nature are enormously expensive and laborious, and take up a very great deal of time. The execution of the work embodied by these researches, for example, has occupied no less than three and one-half years. To mention some of its difficulties, I will state that for the transfusion of a single dog's thigh two dogs are always required, one of which, besides, is to be of a rather large size. For the transfusion in a rabbit three animals are likewise always required. Of the bought organs many were found to be cut, and had therefore to be thrown away; others, again, were not fresh enough, and gave no uniform current, while others, again, were insufficiently freed from blood, and consequently gave no current at all. I have not kept any record of the number of experiments which I had to abandon on account of intervening hemorrhages, of deficiency of blood, of stoppage of the current, of bad regulation of temperature, or, finally, on account of access of air, but I know their number is large.

It is known that every alteration of the vascular calibre caused by a pharmacological agent is followed later by a compensatory alteration, however slight it may be. I have not paid sufficient attention to these compensatory alterations to create a special column in my charts for them. At all events these compensatory variations did not prevent me from examining often four various agents on the same organ during two consecutive hours. It is a matter of course that the poisoned blood had to be thrown away in each instance. In experi-

menting with powerful poisons even the blood poured out after termination of the poisoning had to be thrown away, as it was found to still contain poison for some time.

Let us now pass to the interpretation and to a detailed discussion of the results obtained in these experiments.

Chloride of sodium added to the blood in small quantities causes no alterations while traversing the muscular tissues of the thigh. If, however, the blood is mixed in equal proportions with a physiological solution of chloride of sodium, the current rapidly decreases or wholly ceases. If a considerably higher

pressure is employed a regular flow can be again obtained, as I found from several experiments instituted in this manner on rabbits and productive of satisfactory results. That the majority of such experiments, however, failed cannot be ascribed to the chloride of sodium, but merely to the dilution of the blood by the added water. This I have proven by obtaining the same result by the addition of solutions of agents which by themselves increase the blood-current.* Chloride

* *Wiener Academische Sitzungsber.*, vol. lxxxvii., part 3, April, 1883.

CHART I.

Agents having no Distinct Action on the Blood-vessels.

I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.
No. of experiment.	Kind of animal.	Organ.	Pharmacological agent.	Pro mille contents of blood in IV.	Duration of action.	Changes in velocity of outflow.	Transfused absolute quantity of IV.	Special remarks.
				Per ct.	Min.	Per cent.	Mgr.	
1	Dog.	Hind extremity.	Chloride of sodium.	0.5	5	- 3	75	
2	Calif.	Hind extremity.	Chloride of sodium.	1.5	10	0	1200	
3	Dog.	Hind part.	Urea.	1.5	9	+ 6	316	
4	Dog.	Hind part.	Glycogen.	0.1	5	+ 1	9	
5	Dog.	Hind part.	Glycogen.	0.2	10	- 2	42	
6	Dog.	Hind part.	Grape-sugar.	0.6	5	- 3	55	
7	Dog.	Hind part.	Grape-sugar.	0.6	15	- 2	120	
8	Dog.	Hind part.	Kreatin.	0.1	4	+ 10	9	
9	Dog.	Hind part.	Kreatin.	0.1	10	+ 6	20	
10	Dog.	Hind extremity.	Sulphate of sodium.	1.0	13	- 1	87	
11	Dog.	Hind extremity.	Sulphate of sodium.	1.2	10	- 2	110	
12	Calif.	Foot.	Ferro-cyanide of potassium.	1.0	12	+ 5	89	{ The statement regarding quantity of the salt refers to the contained free acid.
13	Dog.	Hind extremity.	Citrate of sodium.	1.2	6	0	85	
14	Sheep.	Horn of uterus.	Phosphate of sodium.	2.0	20	0	29	
15	Calif.	Foot.	Chlorate of potassium.	1.0	23	+ 4	63	In the first few minutes a transient slowing of the flow.
16	Hog.	Kidney.	Iodate of sodium.	1.0	6	- 1	53	At first quickening, but soon passing.
17	Hog.	Kidney.	Bromate of sodium.	1.0	9	0	45	
18	Hog.	Kidney.	Bromide of sodium.	2.0	10	0	62	{ In the first minutes a quickly-disappearing quickening of the flow.
19	Hog.	Kidney.	Bromide of sodium.	2.0	8	0	144	
20	Hog.	Kidney.	Bromide of sodium.	3.0	9	+ 2	160	At first acceleration of very short duration.
21	Hog.	Kidney.	Bromide of sodium.	1.0	7	0	48	
22	Dog.	Hind extremity.	Antipyrin.	1.0	15	0	68	
23	Hog.	Kidney.	Antipyrin.	0.4	5	+ 3	38	
24	Hog.	Kidney.	Antipyrin.	1.0	4	+ 4	90	
25	Hog.	Kidney.	Antipyrin.	2.0	5	- 4	105	
26	Dog.	Spleen.	Hydrochinon.	0.4	5	0	20	
27	Dog.	Hind extremity.	Hydrochinon.	0.2	6	0	11	
28	Hog.	Kidney.	Resorcin.	0.5	6	+ 28	20	
29	Dog.	Spleen.	Resorcin.	0.1	10	0	40	
30	Calif.	Foot.	Alcohol.	2.0	13	0	98	
31	Calif.	Foot.	Alcohol.	2.0	11	- 5	72	
32	Calif.	Foot.	Alcohol.	1.0	10	0	60	
33	Calif.	Foot.	Alcohol.	1.0	15	+ 8	40	
34	Hog.	Kidney.	Chloroform.	2.0	12	0	85	
35	Hog.	Kidney.	Chloroform.	3.0	15	+ 3	42	
36	Dog.	Kidney.	Caffeine.	0.15	5	+ 6	15	
37	Hog.	Kidney.	Caffeine.	1.00	6	+ 16	100	
38	Hog.	Kidney.	Caffeine.	1.20	6	+ 120	110	
39	Hog.	Kidney.	Cocaine.	0.20	6	0	6	{ Later a moderate slackening of the current followed.
40	Hog.	Kidney.	Cocaine.	0.12	5	0	10	
41	Dog.	Small intestines.	Apomorphine.	0.05	5	- 3	3.5	The very active peristaltic movements of the bowels are not altered by the poison.
42	Dog.	Kidney.	Apomorphine.	0.10	5	0	9	{ The very active movement of the organ, which is in the first stage of pregnancy, continues, only the waves (of motion) grow more shallow.
43	Rabbit.	Horn of uterus.	Apomorphine.	0.20	14	0	2	
44	Sheep.	Horn of uterus.	Emetine.	0.40	6	0	2.5	
45	Hog.	Kidney.	Citrate of ergotine.	0.02	16	0	2	
46	Dog.	Hind part.	Arsenite of sodium.	0.13	10	0	13	
47	Hog.	Kidney.	Arsenite of sodium.	0.40	7	0	32	
48	Dog.	Hind part.	Nitrate of strychnine.	0.02	9	0	1.2	
49	Hog.	Kidney.	Nitrate of strychnine.	0.10	6	+ 8	6	
50	Hog.	Kidney.	Hydrochlorate of nicotine.	0.10	8	0	9	
51	Dog.	Hind part.	Hydrochlorate of nicotine.	0.20	3	- 20	14	
52	Sheep.	Horn of uterus.	Hydrochlorate of nicotine.	0.80	16	0	2.5	

CHART II.

Agents which Dilate the Vessels.

I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.
No. of experiment.	Kind of animal.	Organ.	Pharmacological agent.	Per mille contents of blood in IV.	Duration of action.	Changes in velocity of outflow.	Transfused absolute quantity of IV.	Special remarks.
				Per cent.	Min.	Per cent.	Mgr.	
53	Dog.	Hind extremity	Sulphate of curarine.	0.05	5	+ 10	2.5	
54	Dog.	Hind extremity.	Sulphate of curarine.	0.10	5	+ 170	6	
55	Sheep.	Horn of uterus.	Sulphate of curarine.	0.20	10	+ 400	4	
56	Dog.	Kidney.	Hydroxide of methyl caffeine.	0.50	8	+ 100	50	
57	Dog.	Kidney.	Hofmeister's platinum base.	0.01	13	+ 90	0.6	
58	Dog.	Hind extremity	Hofmeister's platinum base.	0.01	7	+ 37	0.7	{ All indicated figures refer to PA; dichloride of platinum and ammonium is meant.
59	Dog.	Hind extremity	Hofmeister's platinum base.	0.05	8	+ 50	8	
60	Dog.	Hind extremity.	Hofmeister's platinum base.	0.10	8	+ 11	8	
61	Dog.	Hind extremity.	Hofmeister's platinum base.	0.005	6	+ 80	3	After-effect 12 minutes.
62	Dog.	Hind extremity.	Chloride of sodium and platinum.	0.15	3	+ 42	80	
63	Dog.	Hind extremity.	Chloride of sodium and bismuth.	0.18	3	+ 10	80	
64	Dog.	Kidney.	Tartrate of sodium and antimony	0.20	10	+ 100	3	
65	Dog.	Kidney.	Tartrate of iron and sodium.	0.30	11	0	13	
66	Cal.	Foot.	Tartrate of iron and sodium.	0.10	12	0	10	{ The indicated quantities refer to Fe ₂ O ₃ .
67	Dog.	Kidney.	Tartrate of iron and sodium.	0.40	8	+ 30	14	
68	Dog.	Kidney.	Tartrate of iron and sodium.	0.44	8	+ 133	41	
69	Dog.	Kidney.	Citrate of sodium and manganese.	0.035	5	+ 65	2.5	The statements refer to MnO.
70	Dog.	Kidney.	Citrate of sodium and manganese.	0.06	7	+ 100	4.5	
71	Dog.	Kidney.	Citrate of sodium and manganese.	0.30	3	+ 274	81	
72	Dog.	Kidney.	Carbonate of lithium.	0.33	5	+ 19	10	
73	Dog.	Kidney.	Carbonate of lithium.	0.33	6	+ 200	30	{ Action decreases already in the fourth minute of the transfusion.
74	Cal.	Foot.	Sodium of lithium.	3.00	24	+ 14	110	
75	Dog.	Hind part.	Sodium of lithium.	0.90	3	+ 70	90	
76	Dog.	Kidney.	Sulphate of lithium.	2.50	8	+ 68	170	
77	Dog.	Kidney.	Bromate of lithium.	1.00	4	+ 24	80	
78	Dog.	Kidney.	Bromate of lithium.	1.66	8	+ 78	150	
79	Dog.	Kidney.	Bromate of lithium.	1.90	6	+ 101	140	Action decreases already in the fourth minute of transfusion.
80	Dog.	Kidney.	Bromate of lithium.	3.00	4	+ 260	180	
81	Dog.	Kidney.	Iodate of lithium.	1.00	7	+ 0	70	
82	Dog.	Kidney.	Iodate of lithium.	2.00	2	+ 80	80	
83	Dog.	Kidney.	Iodate of lithium.	3.00	9	+ 100	240	
84	Cal.	Foot.	Ferro-cyanide of potassium.	1.00	3	+ 117	33	
85	Dog.	Kidney.	Ferro-cyanide of potassium.	0.10	15	+ 66	115	
86	Cal.	Foot.	Ferro-cyanide of potassium.	0.50	5	+ 39	20	
87	Cal.	Foot.	Ferro-cyanide of potassium.	0.50	7	+ 87	24	
88	Cal.	Foot.	Ferro-cyanide of potassium.	1.00	17	+ 209	39	
89	Dog.	Kidney.	Kalrin.	0.20	3	+ 33	14	After-effect 7 min. { The blood assumes the
90	Dog.	Kidney.	Kalrin.	0.20	8	+ 105	12	After-effect 5 min. { color of chocolate.
91	Dog.	Hind part.	Nitrite of potassium.	0.05	5	+ 18	3	
92	Dog.	Hind part.	Nitrite of potassium.	0.50	8	+ 530	32	After-effect 23 minutes.
93	Dog.	Kidney.	Nitrite of amyl.	2.00	13	+ 550	120	After-effect 20 minutes.
94	Dog.	Kidney.	Nitrite of amyl.	5.00	3	+ 900	340	After-effect 25 minutes.
95	Dog.	Kidney.	Isonitrite of propyl.	2.00	10	+ 550	100	After-effect 20 minutes.
96	Dog.	Kidney.	Carbonic oxide.	Little.	10	0	0	
97	Dog.	Kidney.	Carbonic oxide.	Much.	10	+ 180	0	
98	Sheep.	Horn of uterus.	Sodium ergotinate.	0.30	12	+ 40	7	The figures refer to free acid.
99	Sheep.	Horn of uterus.	Sodium ergotinate.	0.80	15	+ 200	29	
100	Sheep.	Horn of uterus.	Sodium ergotinate.	1.38	10	+ 400	24	
101	Dog.	Kidney.	Paraldehyde.	1.00	25	+ 105	100	After-effect 20 minutes.
102	Dog.	Kidney.	Paraldehyde.	2.00	7	+ 220	170	After-effect 20 minutes.
103	Dog.	Kidney.	Paraldehyde.	2.00	14	+ 400	43	After-effect 26 minutes.
104	Dog.	Kidney.	Paraldehyde.	2.00	10	+ 1500	160	After-effect 40 minutes.
105	Dog.	Kidney.	Acetal.	1.00	10	+ 100	48	
106	Dog.	Kidney.	Acetal.	1.00	24	+ 400	72	After-effect 10 minutes.
107	Dog.	Kidney.	Urethan.	2.00	5	+ 140	120	
108	Dog.	Kidney.	Urethan.	10.00	5	+ 200	710	
109	Dog.	Kidney.	Urethan.	4.00	5	+ 490	360	
110	Cal.	Foot.	Turpentine.	4.00	20	+ 233	140	After-effect 10 minutes.
111	Cal.	Foot.	Anise oil.	4.00	10	+ 600	115	
112	Cal.	Foot.	Peppermint oil.	0.80	10	+ 500	20	
113	Cal.	Foot.	Peppermint oil.	4.00	4	+ 1900	260	
114	Cal.	Foot.	Ethereal oil of mustard.	0.33	10	+ 200	7	Produced quickening of flow reaches its
115	Dog.	Kidney.	Ethereal oil of mustard.	0.66	10	+ 500	45	height in the thirty-second minute (i.e.,
116	Dog.	Kidney.	Ethereal oil of mustard.	2.00	4	+ 620	93	20 minutes after termination of the trans-
117	Dog.	Kidney.	Hydrochlorate of quinine.	0.10	10	+ 50	4	fusion of the mustard oil), and then
118	Dog.	Kidney.	Hydrochlorate of quinine.	0.05	20	+ 160	8	slowly decreases.
119	Sheep.	Horn of uterus.	Hydrochlorate of quinine.	1.00	2	+ 250	8	After-effect 10 minutes.
120	Dog.	Kidney.	Hydrochlorate of quinine.	0.05	7	+ 500	4	
121	Sheep.	Horn of uterus.	Hydrochlorate of quinine.	1.00	7	+ 3300	15	
122	Dog.	Hind extremity.	Sulphate of cinchonine.	0.10	5	+ 100	1	
123	Dog.	Kidney.	Sulphate of cinchonine.	0.30	2	+ 175	4	After-effect 3 minutes.
124	Dog.	Hind extremity.	Sulphate of cinchonine.	0.30	2	+ 200	5	After-effect 4 minutes.
125	Dog.	Liver.	Sulphate of cinchonine.	0.30	3	+ 200	5	After-effect 5 minutes.
126	Dog.	Kidney.	Hydrochlorate of chinolin.	0.50	3	+ 140	26	
127	Dog.	Kidney.	Hydrochlorate of chinolin.	0.05	10	+ 12	5	
128	Dog.	Kidney.	Hydrochlorate of chinolin.	0.05	10	+ 50	4	
129	Dog.	Kidney.	Hydrochlorate of chinolin.	0.33	1	+ 64	12	
130	Dog.	Liver.	Hydrochlorate of chinolin.	0.50	3	+ 250	10	Transfusion from the artery.

CHART II.—*Continued.*

I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.
No. of experiment.	Kind of animal.	Organ.	Pharmacological agent.	Pro mille contents of blood in IV.	Duration of action.	Changes in velocity of outflow.	Transfused absolute quantity of IV.	Special remarks.
131	Dog.	Spleen.	Hydrochlorate of leucolin.	Per ct.	Min.	Percent.	Mgr.	
132	Dog.	Liver.	Hydrochlorate of leucolin.	0.10	8	+ 90	3	
133	Hog.	Kidney.	Hydrochlorate of leucolin.	0.50	2	+ 100	0	
134	Dog.	Spleen.	Hydrochlorate of leucolin.	0.50	3	+ 106	9	
135	Dog.	Spleen.	Hydrochlorate of leucolin.	0.40	1	+ 160	2.5	After-effect 3 minutes.
136	Hog.	Kidney.	Hydrochlorate of leucolin.	0.40	2	+ 500	9	After-effect 4 minutes.
137	Hog.	Kidney.	Hydrochlorate of leucolin.	3.00	1	+ 700	125	After-effect 10 minutes.
138	Rabbit.	External ear.	Salicylate of sodium.	0.20	6	+ 96	12	After-effect 4 minutes.
139	Sheep.	Horn of uterus.	Hydrate of chloral.	1.00	22	+ 50	40	After-effect 5 minutes.
140	Sheep.	Horn of uterus.	Hydrate of chloral.	4.00	7	+ 104	30	
141	Rabbit.	Horn of uterus.	Hydrate of chloral.	10.00	5	+ 208	150	After-effect always present, but lasting only a few minutes.
142	Rabbit.	Horn of uterus.	Hydrate of chloral.	10.00	5	+ 230	150	
143	Hog.	Kidney.	Hydrate of chloral.	6.00	12	+ 400	90	
144	Hog.	Kidney.	Hydrate of chloral.	1.30	18	+ 400	60	After-effect 4 minutes.
145	Dog.	Kidney.	Hydrate of chloral.	1.30	30	+ 650	70	After-effect 5 minutes.
146	Rabbit.	Hind extremity.	Hydrate of chloral.	1.00	20	600	50	After-effect 6 minutes.
147	Dog.	Hind extremity.	Hydrate of chloral.	5.00	8	500	450	After-effect 5 minutes.
148	Rabbit.	Hind extremity.	Hydrate of chloral.	10.00	4	1100	480	After-effect 6 minutes.
149	Rabbit.	Horn of uterus.	Hydrate of chloral.	1.00	2	+ 800	50	The flow increases during the first few minutes after termination of transfusion of chloral.
150	Sheep.	Horn of uterus.	Extr. opii depuratum.	2.00	9	+ 1900	30	Long after-effect.
151	Hog.	Kidney.	Hydrochlorate of morphine.	4.00	6	+ 2400	100	
152	Dog.	Hind part.	Hydrochlorate of morphine.	0.45	7	+ 60	24	
153	Rabbit.	Horn of uterus.	Sulphate of atropine.	0.40	2	+ 54	50	
154	Rabbit.	Horn of uterus.	Sulphate of atropine.	0.20	14	+ 40	3	
155	Rabbit.	Horn of uterus.	Sulphate of atropine.	0.20	10	+ 40	2	
156	Rabbit.	Horn of uterus.	Sulphate of atropine.	0.20	10	+ 20	1.6	
157	Dog.	Kidney.	Sulphate of atropine.	0.20	14	+ 50	5	
158	Dog.	Small intestines.	Sulphate of atropine.	0.05	6	+ 55	4	
159	Dog.	Kidney.	Sulphate of atropine.	0.05	3	+ 80	3	
160	Rabbit.	Horn of uterus.	Sulphate of atropine.	0.05	7	+ 220	5	
161	Rabbit.	Horn of uterus.	Sulphate of atropine.	0.20	13	+ 260	5	
162	Rabbit.	Horn of uterus.	Sulphate of atropine.	0.20	7	+ 400	3	
163	Hog.	Kidney.	Sulphate of atropine.	0.20	8	+ 400	3	
164	Calif.	Foot.	Atropine.	0.02	4	+ 75	1.8	After-effect 4 minutes.
165	Calif.	Foot.	Free hydrochloric acid.	0.08	10	+ 20	5	Calculated on HCl.
166	Dog.	Hind part.	Free hydrochloric acid.	0.16	10	+ 50	8	
167	Dog.	Hind extremity.	Free hydrochloric acid.	0.04	5	+ 28	4	
168	Dog.	Hind extremity.	Free hydrochloric acid.	0.08	3	+ 20	6	
169	Hog.	Kidney.	Free hydrochloric acid.	0.08	9	+ 113	8	
			Free hydrochloric acid.	0.35	10	+ 66	50	Effect gradually lessens in the sixth minute of the transfusion.

CHART III.

Agents which Contract the Blood-vessels.

I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.
No. of experiment.	Kind of animal.	Organ.	Pharmacological agent.	Pro mille contents of blood in IV.	Duration of action.	Changes in velocity of outflow.	Transfused absolute quantity of IV.	Special remarks.
170	Hog.	Kidney.	Free sulphuric acid.	Per ct.	Min.	Percent.	Mgr.	
171	Hog.	Kidney.	Free sulphuric acid.	0.29	3	— 18	20	Calculated on H ₂ SO ₄ .
172	Hog.	Kidney.	Free sulphuric acid.	1.29	4	— 39	21	
173	Hog.	Kidney.	Free oxalic acid.	0.58	6	— 83	50	
174	Hog.	Kidney.	Free oxalic acid.	0.10	4	— 67	75	After-effect 3 minutes.
175	Dog.	Hind extremity.	Neutral oxalate of sodium.	0.26	3	— 74	15	After-effect 33 minutes.
176	Dog.	Hind extremity.	Neutral oxalate of sodium.	0.63	6	— 34	5	Calculated on free oxalic acid.
177	Dog.	Hind extremity.	Hydrochlorate of pilocarpine.	0.10	6	— 58	10	
178	Dog.	Kidney.	Hydrochlorate of pilocarpine.	0.20	7	— 34	14	
179	Dog.	Kidney.	Hydrochlorate of pilocarpine.	0.40	10	— 50	16	
180	Dog.	Hind part.	Sulphate of muscarine.	0.10	15	— 20	6	
181	Sheep.	Horn of uterus.	Sulphate of muscarine.	0.10	7	— 10	7	In first few minutes transient acceleration of flow.
182	Sheep.	Horn of uterus.	Sulphate of muscarine.	0.5	10	— 30	3	
183	Sheep.	Horn of uterus.	Sulphate of muscarine.	0.5	9	— 45	4	
184	Rabbit.	Horn of uterus.	Sulphate of muscarine.	0.5	14	— 29	5	Wave-motion of uterus in no way influenced by muscarine.
185	Rabbit.	Horn of uterus.	Sulphate of muscarine.	0.5	26	— 30	5	
186	Sheep.	Horn of uterus.	Sulphate of muscarine.	0.5	11	— 30	4	
187	Hog.	Kidney.	Formamidate of mercury.	0.20	18	— 63	6	After-effect 7 minutes.
188	Dog.	Kidney.	Cuprum oxyd. sodio-tartaric.	0.30	7	— 28	6	After-effect 13 minutes.
	Dog.	Kidney.	Cuprum oxyd. sodio-tartaric.	0.02	5	— 27	1.8	After-effect 14 minutes.

CHART III.—Continued.

I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.
No. of experiment.	Kind of animal.	Organ.	Pharmacological agent.	Pro mille contents of blood in IV.	Duration of action.	Changes in velocity of outflow.	Transfused absolute quantity of IV.	Special remarks.
				Per ct.	Min.	Percent.	Mgr.	
189	Hog.	Kidney.	Caprum oxyd. sodio-tartaric.	0.15	5	— 75	3	After-effect 9 minutes.
190	Dog.	Hind part.	Chloride of barium.	1.00	7	— 73	40	After-effect 32 minutes.
191	Dog.	Hind part.	Chloride of barium.	0.50	6	— 82	13	After-effect 49 minutes.
192	Hog.	Kidney.	Chloride of barium.	0.90	3	— 86	25	After-effect 34 minutes.
193	Hog.	Kidney.	Chloride of barium.	0.10	5	— 84	3	After-effect 33 minutes.
194	Dog.	Hind part.	Chloride of barium.	0.10	4	— 50	8.5	After-effect 26 minutes.
195	Dog.	Kidney.	Chloride of barium.	0.05	9	— 67	5	After-effect 28 minutes.
196	Dog.	Hind part.	Salicylate of physostigmine.	0.10	5	— 53	9.8	After-effect 3 minutes.
197	Dog.	Small intestines.	Salicylate of physostigmine.	0.05	4	— 50	3.5	After-effect 40 minutes. The normal peristaltic movements are changed into tetanus by the transfusion of physostigmine.
198	Dog.	Kidney.	Salicylate of physostigmine.	0.08	4	— 84	7.6	After-effect 55 minutes.
199	Dog.	Hind part.	Hydrochlorate of veratrine.	0.10	3	— 93	2.5	After-effect 9 minutes.
200	Dog.	Liver.	Hydrochlorate of veratrine.	0.05	1	— 64	0.2	After-effect 15 minutes.
201	Dog.	Liver.	Hydrochlorate of veratrine.	0.05	2	— 28	0.5	After-effect 13 minutes.
202	Dog.	Liver.	Hydrochlorate of veratrine.	0.025	5	— 90	1.2	After-effect 13 minutes.
203	Dog.	Hind part.	Hydrochlorate of veratrine.	0.100	3	— 93	2.5	After-effect 9 minutes.
204	Dog.	Kidney.	Antiarine.	0.003	1	— 42	0.2	After-effect 17 minutes.
205	Hog.	Kidney.	Antiarine.	0.005	4	— 63	0.2	After-effect 25 minutes.
206	Hog.	Kidney.	Antiarine.	0.003	2	— 80	0.3	After-effect 47 minutes.
207	Hog.	Kidney.	Sabadilline.	0.033	6	— 17	2.5	After-effect 4 minutes.
208	Hog.	Kidney.	Oleandrine.	0.013	5	— 38	1.3	After-effect 25 minutes.
209	Hog.	Kidney.	Apocynine.	0.013	4	— 0	1.5	
210	Hog.	Kidney.	Apocynine.	0.040	4	— 50	0.9	After-effect 19 minutes.
211	Hog.	Kidney.	Scillaine.	0.080	6	— 44	1.7	After-effect 14 minutes.
212	Hog.	Kidney.	Scillaine.	0.020	1	— 40	0.2	After-effect 10 minutes.
213	Hog.	Kidney.	Scillaine.	0.005	3	— 50	0.2	After-effect 11 minutes.
214	Hog.	Kidney.	Convallamarine.	0.020	1	— 32	0.2	After-effect 10 minutes.
215	Hog.	Kidney.	Convallamarine.	0.010	2	— 50	0.4	After-effect 17 minutes.
216	Hog.	Kidney.	Convallamarine.	0.013	2	— 57	1.1	After-effect 11 minutes.
217	Hog.	Kidney.	Erythrophleine.	0.050	1	— 61	0.4	After-effect 22 minutes.
218	Hog.	Kidney.	Erythrophleine.	0.033	3	— 67	6.0	After-effect 35 minutes.
219	Hog.	Kidney.	Erythrophleine.	0.085	3	— 80	0.9	After-effect 38 minutes.
220	Hog.	Kidney.	Digitalin (Schmiedeberg).	0.002	4	— 17	0.1	After-effect 3 minutes.
221	Dog.	Liver.	Digitalin (Schmiedeberg).	0.010	5	— 25	0.3	After-effect 5 minutes.
222	Dog.	Kidney.	Digitalin (Schmiedeberg).	0.005	5	— 64	0.5	After-effect 38 minutes.
223	Dog.	Kidney.	Digitalin (Schmiedeberg).	0.006	3	— 69	0.3	After-effect 4 minutes.
224	Hog.	Kidney.	Helleboreine.	0.005	3	— 11	0.	
225	Dog.	Hind extremity.	Helleboreine.	0.005	10	— 24	0.9	After-effect 8 minutes.
226	Dog.	Kidney.	Helleboreine.	0.001	6	— 28	0.9	After-effect 18 minutes.
227	Dog.	Kidney.	Helleboreine.	0.005	4	— 28	0.4	After-effect 10 minutes.
228	Sheep.	Uterus.	Helleboreine.	0.100	24	— 30	4.0	
229	Rabbit.	Hind extremity.	Helleboreine.	0.050	5	— 30	0.2	After-effect 18 minutes.
230	Rabbit.	Hind extremity.	Helleboreine.	0.005	2	— 30	0.2	After-effect 21 minutes.
231	Dog.	Hind part.	Helleboreine.	0.010	4	— 36	0.9	After-effect 28 minutes.
232	Dog.	Hind extremity.	Helleboreine.	0.004	11	— 42	0.3	After-effect 10 minutes.
233	Dog.	Kidney.	Helleboreine.	0.030	4	— 48	2.5	After-effect 37 minutes.
234	Rabbit.	Hind extremity.	Helleboreine.	0.005	12	— 52	0.8	After-effect 40 minutes.
235	Dog.	Kidney.	Helleboreine.	0.010	3	— 54	0.9	After-effect 48 minutes.
236	Hog.	Kidney.	Helleboreine.	0.010	6	— 56	1.6	After-effect 42 minutes.
237	Cal.	Foot.	Helleboreine.	0.010	7	— 60	0.3	After-effect 38 minutes.
238	Dog.	Hind extremity.	Helleboreine.	0.010	8	— 66	0.9	After-effect 27 minutes.
239	Rabbit.	Hind extremity.	Helleboreine.	0.050	15	— 82	0.9	
240	Sheep.	Uterus.	Helleboreine.	0.100	29	— 87	2.2	
241	Dog.	Hind extremity.	Helleboreine.	0.050	7	— 98	7.5	After-effect 83 minutes.
242	Hog.	Kidney.	Helleboreine.	0.023	6	— 100	2.2	The flow disappears nearly wholly for 3 minutes; after-effect 65 minutes.

ride of sodium is consequently by itself an indifferent agent in regard to muscular organs. This, however, does not hold true in reference to the kidney, where chloride of sodium, being a diuretic salt, increases the velocity of the blood-current. Urea was found to have a similar action, and in transfusions of the thigh appeared rather indifferent, while it increased the current considerably while passing through the kidney, as was previously ascertained by Abeles. I shall publish my observations with this and other diuretic agents in a subsequent paper. Caffeine probably belongs also to this category, as appears from the recent researches

of W. von Schroeder* on the diuretic virtues of this drug. Likewise indifferent were found to be glycogen, grape-sugar, kreatin, neutral phosphate of sodium, chlorate of potassium, iodate of sodium, bromate of sodium, bromide of sodium, and fluoride of sodium.

The antipyretics behaved very differently. Quinine, cinchona, chinoline, leucoline, salicylate of sodium, and oil of mustard caused a very considerable acceleration of the current. Resorcin appeared to increase the velocity only when given in large doses, while

* *Centralblatt f. die Med. Wiss.*, 1886, No. 26.

hydrochinon and antipyrin were wholly indifferent. Carbolic acid* even appeared to reduce the volume of the current.

There are numerous authors, particularly Maragliano,† who claim that antipyrin dilates the blood-vessels even in non-febrile persons. I have never been able to confirm this statement either in experiments with blood-pressure or in those with blood-transfusion, and I am consequently entitled to regard this claim as unproven, at least as far as the non-febrile organism is concerned. Kairin,‡ as stated above, behaves entirely differently. Besides, this drug caused, as pointed out first by E. Girat in 1883, and by Morochowez§ in 1884, the formation of considerable methæmoglobin. The other agents which can form methæmoglobin, such as ferrocyanide of potassium, nitrite of potassium, nitrite of amyl, and isonitrite of propyl, cause, like kairin, acceleration of the current. Agents which exercise an alterative influence on hæmoglobin, such as oxide of carbon in larger doses, sulphide of hydrogen (examined by Smirnoff),|| and prussic acid (examined by Mosso), increase likewise the volume of the current.

That oxide of carbon (after a preceding temporary contraction) causes a pronounced and lasting dilatation of blood-vessels has been proclaimed even before Mosso by Traube,¶ but has only been referred to central causes. Klebs,** moreover, regarded the vascular dilatation as the principal action of carbonic oxide, and recommended ergot as an antidote for it. A. Mayer†† evidently held the same view, for he obtained in hemicrania with carbonic oxide similar results as with nitrite of amyl.

The acceleration of the current caused by free hydrochloric acid probably refers also to its decomposing influence upon hæmoglobin, at least the blood becomes at once colored after its addition.

* Not included in the charts.

† *Italia Medica*, Giugno, 1884; *Bullet. delle Scienze Med.* Giugno, 1884, p. 329; *Arch. Clin. Ital.*, 1884, No. 26; compare *Kober's Jahresbericht der Pharmacotherapie*, p. 313.

‡ Dilatation of peripheral vessels by kairin has been observed by G. B. Queivolo and E. Maragliano; compare *Kober's Jahresbericht der Pharmacotherapie*, p. 326.

§ *Kober's Jahr. d. Pharm.*, p. 326.

|| *Teshenedelnaja Klinitscheskaja Gaseta*, 1884, No. 28.

¶ Traube, *Ges. Beitr. z. Pathol. und Phys.*, Berlin, 1871, vol. i. p. 329; cf. Pokrowski, *Du Bois-Reymond's Arch.*, 1866, p. 59.

** *Virch. Arch.*, vol. xxii., 1865, p. 497.

†† *Wein. Med. Presse*, 1865, No. 46.

It is a very notable fact that alcohol and chloroform scarcely affect the velocity of the blood-current in isolated organs. The reduction of pressure obtained in experiments with blood-pressure sets in only after large doses, and is caused very clearly by a central vaso-motoric paralysis. Of all other narcotic agents, urethan is the most indifferent one, as could be readily inferred from Schmiedeberg's investigations. I have only examined urethan on kidneys where the diuretic action of the drug probably interfered with the determination of its action on the blood-vessels. I believe that on muscular organs the effects on the blood-current would have been equally negative.

Paraldehyde, acetal, hydrate of chloral, morphine, and extract of opium, on the other hand, cause a distinct acceleration of the current. The custom originating from Von Mering,‡‡ of employing hydrate of chloral in pharmacological analysis in order to cut off the vaso-motoric centre, is consequently not wholly correct, as an increased dose will cause also peripheral vaso-motoric paralysis together with the central paralysis. The same holds true of nitrite of amyl, the action of which is by Bernheim§§ and Filehne,||| however, regarded as central, while Brunton,¶¶ Wood,*** Richardson,††† Pick,‡‡‡ and others believe more in a peripheral causation.

Basing upon erroneous investigations of the pulse, Leyden and Eichhorst§§§§ believe that pilocarpine and nitrite of amyl reduce the tension of the vascular walls. In my researches both drugs acted just the contrary, and even in experiments made with blood-pressure I was unable to determine any resemblance between them.

Regarding cocaine, I find in nearly all non-pharmacological books the statement that it contracts|||| the vessels, and thus causes an augmentation of the pressure.

In my investigations I found cocaine with-

‡‡ *Schmiedeberg's Arch.*, vol. iii., 1875, p. 185.

§§ *Pflüger's Arch.*, vol. viii., 1874, p. 253.

||| *Ibid.*, vol. ix., 1875, p. 470, and *Du Bois-Reymond's Arch.*, 1879, p. 386.

¶¶ *Ber. d. Königl. Sächs. Gesel. d. Wiss. zu Leipzig*, 1869, p. 285.

*** *Amer. Journ. of Med. Sciences*, 1871, pp. 39 and 359.

††† *Med. Times and Gazette*, 1870, vol. ii. p. 469.

‡‡‡ Pick, "Nitrite of Amyl and its Therapeutic Application," Second Edition. Berlin, 1877.

§§§§ H. Eichhorst, "Lehrbuch der Physikalischen Untersuchungs Methoden."

||||| Cf. Adolph Witzel, "On Cocaine Anæsthesia," Hagen, 1886, p. 3.

out influence upon the vessels. Apomorphine, which, according to O. Bergmeister and E. Ludwig,* acts upon the cornea like cocaine,—*i.e.*, contracts the vessels,—appeared in my experiments just like cocaine, indifferent in regard to peripheral vessels. Emetine and ergotine proved themselves to be wholly indifferent, which cannot be surprising regarding the latter drug, which my researches† have exposed as generally inert. Ergotinic acid, on the contrary, paralyzes not only the vasomotor centre, but also the peripheral vasomotoric nerves. Arsenic, strychnine, and nicotine were likewise wholly indifferent.

In regard to curare, it has often been said that it does not influence the blood-vessels, and that if a reduction of the pressure is at times observed, this is caused by an adulteration of the drug.

I cannot agree with this view, for I found that curarine obtained from Gehe—possessing a pure and strong curarine action—causes distinct vascular dilatation even in moderate doses. A similar action I obtained from Hofmeister's platinum‡ base and methylhydroxide of caffeine.§ The former, as is well known, has nearly all the effects of curarine, and the latter,|| like all hydroxides of methyl, acts curare-like in some respects.

The soluble double salts of metals did not by any means act all alike.

Iron was in small doses indifferent, while it increased the velocity of the current in larger ones. Platinum, bismuth, antimony, and manganese caused, even in small doses, a distinct acceleration of the current, while mercury and copper acted just the reverse. Still, these investigations ought to be made on various organs, and not, as in my experiments, exclusively on the kidney, as the specific action of the metals on this organ possibly interferes with the interpretation of the results obtained. The same holds true of iodide of lithium, bromide of lithium, and carbonate of lithium, which I could likewise only examine on the kidney, where they accelerated the blood-current, while I know nothing of their influence on the circulation in other organs.

Agents which, like carbonate of sodium, increase the alkalescence of the blood, increase the volume of the blood-current, while agents

like sulphuric acid, which decrease the alkalescence, decrease also the volume of the current. The action of hydrochloric acid has been referred to above. In the action of oxalic acid and its sodium salt the formation of emboli probably causes the decrease of the velocity of the blood.

The ethereal oils, of which I examined oil of turpentine, oil of peppermint, oil of aniseed, and oil of mustard, all act as accelerators of the blood-current.

Atropine causes an increase of the velocity of the off-flowing liquid, while muscarine and pilocarpine act just in the opposite manner, but not very intensely.

Chloride of barium, physostigmine, veratrine, antiarine, sabadilline, oleandrine, apocynine, scillaine, convallamarine, erythrophleine, Schmiedeberg's digitaline and helleboreïne acted so intensely and persistently as vascular contractors in various organs that I was forced to conclude that this action of these drugs makes itself likewise manifest upon man. The experience of my own practice in fact teaches me that that exhibition of preparations of digitalis is followed by an intense vascular contraction. I believe, moreover, that this contraction also occurs in the veins. In German therapeutic books I find a remarkable confusion regarding this point. Thus, Cloëtta, for example, says, even in the last edition of his text-book on therapeutics (p. 217), "Dilatation of the renal artery is one of the therapeutic effects of digitalis." The text-books published in the English language entertain likewise confused views in this respect. The view that the increase of blood-pressure caused by digitalis refers to a vascular contraction appeared early in pharmacological literature. Thus, we find it in the writing of Blake,¶ in 1839; Béranger Férande,** Oulmont†† and Segroux,‡‡ L. Brunton,§§ Briesemann,||| in 1867; Fothergill,¶¶ Gourvat,*** in 1871;

* *Centralbl. f. d. g. Therapie*, 1885, No. 5. Separatabdruck.

† *Gynacol. Centralbl.*, 1886, No. 20.

‡ *Kobert's Jahresber. d. Pharmac.*, i.

§ *Schmiedeberg's Arch.*, 1883, p. 424.

|| This drug I proved to be rather innocuous. *Vide Jahresber.*, i. p. 155.

¶ *Edinburgh Med. and Surg. Journ.*, vol. li., 1839, No. 139, p. 330; *Journal of Physiology*, iv., 1883, p. 365.

** *Bull. de Thérap.*, lxxiii., 1867, pp. 145 and 202.

†† *Ibid.*, lxxii., Avril, 1867, p. 355.

‡‡ *Gaz. Hebdom.* (II. S.), iv., 1867, Nos. 8, 9, 11.

§§ L. Brunton, "On Digitalis," etc., London, 1868; *cf. Centr. f. d. Med. Wissen.*, 1868, p. 688.

||| C. Briesemann, "Microsc. Untersuch. über d. Wirk. d. Digit., Veratr. und Ergot. auf die Circulation," *Inaug. Essay*, Rostock, 1869.

¶¶ *Brit. Med. Journ.*, 1871; 1st, 8th, 15th, 29th July, 5th August.

*** *Gaz. Méd. de Paris* (III. S.), t. xxv., No. 39, p. 438, and No. 47, p. 534.

Ackermann,* in 1872; Brunton and A. B. Meyer,† in 1873.

But the proofs presented by these authors were so little convincing that Böhn† and Görz§ regarded them justly as unsatisfactory and critically untenable. Herman Köhler,|| in 1876, confirmed the views of the two latter observers. W. Williams showed later very clearly that the influence of substances belonging to the digitalis group upon the heart was sufficiently intense to bring about an extraordinary increase in blood-pressure by itself.

Quite available are also the researches of Henry H. Donaldson and Lewis T. Stevens¶ in Baltimore, and Sidney Ringer and Harrington Sainsbury** in London. These authors, who examined the influence of the digitalis group on the vessels (without the heart) of cold-blooded animals, did not content themselves with the unreliable microscopic examination of vessels, but resorted to transfusions in turtles. Reliable transfusions on organs of warm-blooded animals with the digitalis group do not appear to have been made as yet, for the researches of S. Talma and A. J. von der Weyde are little convincing.

In the continuation of my paper which I hope soon to publish, the researches of these authors will again be referred to.

I do not wish to draw from my own experiments the hasty conclusion that all members of the digitalis group cause a contraction of blood-vessels. Still, I must regard it as settled that *some members of this group produce a pronounced vascular contraction*. In the third part of this paper I shall treat of the members of the digitalis group having a different action.

The same action was manifested by the poison of toads in the transfusion of frogs,†† while in the transfusion of toads no alteration of the blood-volume was observed. Consequently, in the transfusion of toads with chloride of barium, helleboreine, and digitalis, in

doses which in frogs cause a very great reduction of the current, no influence upon the vessels could be made out. These animals, as Vulpian has pointed out, are nearly insusceptible against poisoning by substances belonging to the toad-poison group,—i.e., the digitalis group. (Only if the poison is administered in large doses intoxication ensues.) Quite in concord with this is the fact that the poisoning with toad-poison or helleboreine succeeds as well in the larvæ of toads as in those of frogs,—the larvæ of toads do not yet secrete any poison, and are consequently still unaccustomed to the action of this poison.

I have dwelt upon this difference of behavior between frogs and toads towards the substances of the digitalis group in blood-transfusions so explicitly because I regard it as the best proof that the reduction of the off-flowing quantity caused by these agents is not the result of mechanical or chemical alterations of the blood or of any other secondary effect, but of an especial physiological action, which of course is only absent in such animals the organs of which are accustomed to poisons of this kind. In the same manner, for example, the organs of morphiophages would not react to small doses of morphine as the organs of other persons, or, in other words, no dilatation of blood-vessels would ensue in the former.

The experiments on cold-blooded animals I have also utilized in order to determine whether in*transfusions of the whole animal the systolic cardiac stoppage sets in previous to the vascular contraction. If such be the case the vascular contraction would be a rather secondary phenomenon, would appear only when large doses are given, and would not take place *in vita*. In the determination of these points the results obtained of course differed according to whether the injection of the fluid (serum of rabbits) was sent in a centripetal (vena cava) or in a centrifugal (aorta) direction. In either case I obtained, however, provided the poison was added in a state of sufficient dilution, a distinct vascular contraction. From this fact I conclude that the vascular contraction caused by the digitalis group is not a post-mortem appearance, but belongs essentially to the physiological action of these drugs.

I need not add that I have often observed this phenomenon not only under the microscope but also with the unaided eye.

There was still to be determined whether the vascular contraction caused by digitalis is to be regarded as a muscular or as a nervous

* *Tagebl. d. 44*, "Naturf. in Rostock," 1871; *Deutsche Arch. f. Klin. Med.*, vol. xi., 1872; *Volkmann's Sammlung Klin. Vortr.*, No. 48.

† *Journal of Anat. and Physiol.* (II. S.), No. 11, 1872, November, p. 135.

‡ *Dorp. Med. Zeitschr.*, iv., 1873, p. 64, and *Pflüger's Arch.*, vol. v. p. 189.

§ Nicolai Görz, "Untersuch. über die Digitalis-prepar." etc., and "Beitrag zur Phys. Wirkung des Digit.," *Inaug. Diss.*, Dorpat, 1873, p. 90.

|| "Handb. d. Phys. Therap.," p. 182.

¶ *Journ. of Physiol.*, vol. iv., 1883, p. 165.

** *Medico-Chirurg. Transactions*. London, 1884.

†† Transfusions with blood, of course, and not with solutions of chloride of sodium, are here meant.

effect. I have attempted the solution of this difficult problem in many different ways. Thus I tetanized, after the appearance of vascular contraction during transfusion of a curarized hind portion of a dog, the sciatic nerve by means of faradic currents, a procedure which previous to the poisoning with helleboreine would have caused great vascular dilatation, exactly as in Bernstein's experiments. During the helleboreine-poisoning, however, this dilatation did not appear, which can only mean that on account of a musculo-vascular spasm the nervous dilatation did not set in. In this connection I beg to recall the action of muscarine on the physostigmine heart, which is likewise negative, although the two drugs are actually not antidotal to each other.

I also transfused cold organs, and found that the agents having a reputed nervous action, such as atropine, morphine, and hydrate of chloral, did not produce any effects, while helleboreine in a sufficient concentration acted very distinctly. It is unlikely that this vascular contraction taking place on cold organs is of nervous origin, for the nervous apparatus of warm-blooded animals do not react at a temperature of 15° to 20° C.

A muscular action, on the other hand, is well possible at so low a temperature.

I also transfused a kidney which in mid-summer had been exposed to decomposition for fifty hours, smelled rank, and showed a green-blue coloration; the transfusion was effected in the ordinary manner in the heat-box. While the most powerful agents of vascular dilatation produced no alteration in the current, I succeeded in this readily with the aid of convallamarine and helleboreine. It is scarcely possible that after a decomposition of fifty hours nervous apparatus should still be functionally active, while this can be well presumed in regard to the smooth muscular organs.

Another series of experiments was instituted with the liver. I have inserted in the charts several experiments, which were executed by transfusing the liver from the artery. The organ was then found to react to the poison like any other organ. In transfusions from the portal vein all poisons, with the sole exception of those belonging to the digitalis group, proved rather inert.* Still, I succeeded several times in obtaining a reduction of the velocity of the current by means of helleboreine and chloride of barium. Boehm†

appears to have obtained similar results with chloride of barium. These differential results, according to the starting-points of the transfusion,—the hepatic artery or the portal vein,—can only be explained by the assumption that the muscular coat is very feebly developed in the portal vein, but strongly so in the hepatic artery. I consequently believe that these experiments can at the same time be regarded as proofs that the digitalis action is as purely of a muscular nature in regard to the blood-vessels as it is in regard to the heart.

(To be continued.)

ON THE ABSENCE OF THE PATELLAR REFLEX IN HEALTH.

BY LESTER CURTIS, M.D., CHICAGO, ILL.

NOT long ago, purely as a matter of curiosity, I examined a patient, a lady of some 65 years of age, for the patellar reflex. I found it absent. The phenomenon to which this name has been given has received many synonymes, the most common of which are tendon reflex, knee-jerk, knee-phenomena, etc. It consists in an extension of the leg following a blow on the patellar tendon. Similar phenomena occur sometimes following irritation of other tendons. The phenomenon is spoken of by writers in such a way as to lead the reader to suppose that it is always present in health. Indeed, most of them state distinctly that this is the case. Althaus, in a recent admirable work, says that he has never found it absent in a healthy person, "except in the two extremes of life. It is difficult or impossible to elicit it in some children before they have learned to walk, and also in decrepit old persons, where there appears to be no particular form of spinal disease" ("Sclerosis of Spinal Cord," p. 139). A. Charlton Bastian says, "The knee-jerk occurs in health, so that it is its absence which is of principal significance" (Quain's "Dict. of Med.," p. 1458). Gower speaks of the phenomenon as occurring in health, but does not refer to any exception ("Diseases of Nervous System"). Erb, one of the first to describe the phenomenon, refers to no exception to its occurrence in health, although he remarks in a general way, and in another place, that in some cases the reflexes are difficult to obtain (Ziemssen's "Cyclopædia of Practice of Medicine," vol. xiii., Wood's ed.). Strümpel says that "after a blow on the tendon there occurs, almost without exception in a healthy person, a more

* *Schmiedeberg's Archiv*, vol. iii., 1875, p. 216.

† Mosso's results do not agree with those of Boehm.

or less active contraction of the quadriceps by which the leg is extended" (*"Lehrbuch der Speciellen Pathologie und Therapie,"* vol. ii. p. 64). The "almost," etc., here is of course a mere saving clause in case of contradiction.

Works on general practice which, without being very accurate or minute, reflect the drift of public opinion in the profession, are very nearly unanimous in the same direction. Loomis, in speaking of locomotor ataxia, says, "The abolition of the patellar tendon reflex is one of the diagnostic signs of the disease." Eichorst, in *"Wood's Library,"* says, "This is one of the earliest symptoms of ataxia. Its appearance indicates the existence of foci of degeneration in the external portions of the posterior columns in the upper lumbar region of its transition to the dorsal region." Such quotations might be multiplied indefinitely. It is plain, therefore, that the presence or absence of this symptom deserves attention.

Observers are not agreed as to the causation of this phenomenon. The prevalent opinion, however, is that of Erb, that it is a true reflex produced by an irritation of the sensitive nerves of the tendon, which is conveyed to the spinal cord through the posterior roots, and to the motor cells of the anterior horns, where a motor impulse arises, which is conveyed to the muscle. "The reflex centre is in the lumbar region of the cord, in the parts corresponding to the second, third, and fourth lumbar nerves" (Bramwell).

The phenomenon occurs quite independently of the brain, and must occur so long as the machinery by which it is produced is in proper order, just as certainly as the pupil responds to light, or any other of the ordinary reflex phenomena, the disturbance which interferes with the production of the phenomena being of course in the large majority of instances some disturbance in the spinal segment. Prominent among these is the sclerosis of the posterior columns, constituting locomotor ataxia on the one hand and degeneration of the motor cells on the other.

But the person mentioned above is healthy in all respects, and especially so as regards the spinal cord. She is an artist, and, in skill of hand and accuracy of eye, few, even among young professionals, are her equal. She is a good walker, and almost as sure of foot as in her younger days. So far as I could learn, she has never had the slightest symptom that could be considered as indicating disease of the cord. The examination, however, is open to criticism. The percussion of the tendon

was done over the clothing, and it is possible that it was not sharp enough to irritate the nerves of the tendon sufficiently, or possibly there may have been an active contraction of the hamstring muscles sufficient to prevent the reflex, though the percussion was repeated many times when she was not looking. I could hardly ask her to allow an examination thorough enough to remove all these doubts, without some other reason than the gratification of mere curiosity.

Althaus says, "The phenomenon may be obtained when the patient is sitting in a chair, and crosses one leg over the other; but, where the legs are short and stout, it is better to let him sit on the table, with the legs hanging down. Where the patient is examined in bed, the limb should be raised by the observer passing his left hand underneath the thigh just above the knee, and giving the tap with the right hand. In general it is not necessary for the patient to be undressed, but where the result is doubtful it is always best to strike the bare skin over the tendon, and it may be useful, especially where the patient appears nervous and excitable, to have his eyes bandaged, so that any interference on his part with the production of the phenomenon may be prevented" (p. 132).

Strümpel says, "In order to call forth the symptom, it is specially necessary that the person investigated shall avoid all active tension of the muscles of the leg, especially the extensor cruris" (p. 64).

I have seen sometimes, from the hands of persons who would feel hurt if they were called clumsy, so heavy a blow given as to produce a vibration that might be mistaken for the reflex phenomenon. The blow should be sharp and quick, from something not too heavy, so as to give an irritation at some depth without jarring the limb. A vigorous contraction of the muscles of the arms will increase the reflex in doubtful cases.

I have examined a good many healthy persons for this symptom since it was first described by Westphal, and have frequently found it absent. These examinations, however, have usually been deficient in some point necessary for scientific completeness. Either precaution was not taken to be sure that the blow was sharp enough to produce sufficient irritation, or the possibility of an involuntary contraction of the muscle was not provided against beyond the possibility of doubt, or the presence of some slight symptom of tabes was not carefully enough inquired into to prevent the possibility of doubt. In many of these

cases, also, no memoranda were made, so that they could be referred to again, and many of the phenomena have slipped from my memory altogether, or the details have become so obscure as to be valueless. But I have one case in which all these conditions have been fulfilled, and that is myself. I have been repeatedly examined for the tendon reflex during the last ten years under circumstances which will admit of no doubt, and the reflex has always been absent. I have never had a symptom of tabes, or any other spinal trouble, and I am sure that those who know me will agree that I have at least as much endurance of fatigue, and as good control of my muscles, as the average healthy man.

It is possible, then, for the reflex to be absent in health, and probably in a large percentage of cases. The persons in whom I have found the reflex absent are all persons of considerable muscular power and of a high degree of tonicity of the muscles, and especially persons of considerable inhibitory power, persons who do not lose self-control by any sudden shock. I suspect that the majority of those who have the reflex are persons of weak nerves and undisciplined muscles, who would scream if some one jumped out upon them from a dark passage, or would be unnerved by a sudden danger,—such persons would be the ones likely to come under the observation of hospital physicians. I doubt whether a hunter who retained his presence of mind upon seeing a grizzly bear suddenly rushing out upon him from a thicket would have much of the reflex, while another who had buck fever upon sight of a deer probably would have it well marked. It certainly is exaggerated in hysterical and neurasthenic cases in whom the inhibitory power is weak. The absence of the reflex is considered to be one of the very earliest symptoms of locomotor ataxia. Strümpel says, "The loss of the patellar reflex is the most constant of all the known symptoms of tabes; it is, indeed, observable so early that the time of its appearance can scarcely ever be determined" (p. 201). And, again, p. 211, "A symptom almost constant and of the highest diagnostic value is the loss of the tendon reflexes, especially the patellar reflex. As already mentioned, the extinction of this reflex is one of the earliest symptoms of the disease, which is of the very greatest significance," etc. It is often almost the only means of distinguishing between locomotor ataxia and certain conditions occurring in neurasthenia and in other affections which may simulate locomotor ataxia, and its im-

portance as a symptom is growing in favor. But if these observations are correct it loses immensely in value. The temptation to theorize is strong, but I will refrain, and only call attention to a recent article by Prof. Hirt in the *Berliner Klinische Wochenschrift* for March 8, 1886, in which he describes three cases of locomotor ataxia with retained patellar reflex.

After some general remarks, he describes the cases as follows:

"On the 25th of April, 1884, Moriz W., a moulder, from Upper Silesia, came under treatment at my polyclinic. The patient stated that he was 57 years old, and that when a soldier, at the age of twenty-one, he had had a chancre, with resulting throat-affection. In early youth, from his tenth to his fifteenth year, he had been an enthusiastic fisherman, and had stood for hours at a time with bare feet in very cold water. His present disease dated from the year 1877, and was characterized, according to his account, by great weakness and pain in the legs, difficulty of breathing, trouble in urination and defecation, impotence. The history of the family was without importance." "On examination it was found that the coarse strength of the muscles was well retained everywhere, and that in no department was atrophy to be discovered. The sensibility was altered in many ways,—first, cutaneous analgesia could be demonstrated over the whole body with the exception of the face and the portion of the head covered by hair. For light pressure the sensibility was, on the contrary, retained, and there were in the neighborhood of both sciatic regions hyperæsthetic zones. Distinct *girdle feeling*, sense of temperature for small differences retained, muscular sense altered. With closed eyes the patient could give no information concerning the position of his legs in bed, and did not know whether the one or the other was carefully raised. Romberg's symptom, ataxic gait. *Patellar reflex on both sides easily and plainly produced*, also the plantar and abdominal reflex. Cremaster reflex on both sides gone. Reflex fixation of the pupil and affection of the eye-muscle could not be demonstrated. Patient had never suffered with diplopia. Pupil of moderate size, reacts very slowly but distinctly to light and accommodative impulse. Paresis of the bladder, unconscious passage of the urine by drops by the impulse of coughing, voiding very slowly, not without burning, boring pain in the urethra. No gastric and no laryngeal crises. Appetite and digestion tolerable; tongue normal; no hemiatrophy." "The circum-

stances which have been represented continued essentially unchanged during a year. In September, 1885, the shooting, lancinating pains were very troublesome to the patient. At the end of November the patient became ill of a double pneumonia, to which he fell a victim on the 17th of December." "Autopsy only partially allowed. Opening of the chest and abdominal cavities was refused by the relatives. On opening the skull, there existed in the brain only a slight congestion of the pia, and its vessels were not abnormal. Brain-substance of normal consistence, in no way changed pathologically. On removal of the spinal cord there was found in fresh transverse section, plainly demonstrable (even macroscopically), gray coloration, and atrophy of the posterior columns. This degeneration could be followed into the middle of the cervical cord, increased in the middle of the dorsal cord, and here the posterior gray columns appeared atrophic. The transition from the dorsal to the lumbar cord appeared, so far as might be judged from the macroscopic appearances, less degenerated. In the middle portion of the lumbar cord, on the contrary, the degenerative process was most distinctly developed. Here also there was atrophy of the posterior gray horns. In teased preparations there were richly scattered degenerated portions, fat-granules, branched cells, and corpora amylacea.

"In what way the degeneration of the single parts spread itself out upon Goll's columns, how Charcot's bandolettes are thereby affected, and whether the division into fields, as Strümpel has described, exists, cannot of course be recognized in fresh or frozen preparations. The description of the single sections of the cord I reserve until after its complete hardening. Here I shall only state provisionally the presence of sclerosis of the posterior columns, so far as it is possible to prove it macroscopically. Nothing was to be noticed macroscopically of a contemporaneous degeneration of the lateral columns or of the direct cerebellar tract.

"The second case concerns the laboring woman Rosina G., still living, from Dürrgoy near Breslau. She was repeatedly examined by me and presented to my clinic. The patient, who was most kindly assigned to me by my colleague, Dr. Magnus, is 46 years old, married since her fourteenth year, has borne ten children, eight of whom died early. She has not been well for fifteen years. Her illness began with active headache, which was especially located in the back of the head, and

lasted for years. Soon the feeling of being slightly tired was added to this, so that the patient has for just ten years been very weak on her legs. Five or six years ago double vision occurred, which continued a few months and then disappeared without, up to the present time, returning. Soon frequent active feeling of dizziness. Gradually there developed, first on the right, then on the left side, an optic atrophy; right eye totally amaurotic, left, a great degree of lowering of acuteness of sight. In the year 1882 there appeared for the first time sensible phenomena of irritation in the form of a girdle sensation and severe lancinating pains; at last they were so tormenting that in the year 1884 they sent the patient to bed for weeks at a time. At the same time (1884) there developed urinary difficulty; the water was passed very slowly, almost drop by drop, only if the bladder was in some way strongly filled. By a slight impulse of coughing a small quantity of urine was passed unconsciously. This paresis of the bladder exists still. For the last eight years there has been very frequent and often very severe vomiting of quantities of watery fluid; this symptom is connected with a feeling of dizziness." "At the first examination, May 13, 1885, it was shown that the patient was a strong, robust-appearing person who showed a good condition of nutrition. The investigation of cranial nerves showed nothing abnormal in the olfactory, oculo-motor, abducens, and facial. The right optic nerve showed a high degree, the left a beginning, atrophy. The right half of the face is anæsthetic for all sorts of feeling. The right half of the tongue is not atrophied; it responds neither to sensitive nor taste irritations. The left half of the face and the tongue are normal in relation to sensibility. By examination of the sensitiveness of the rest of the body a difference between right and left was not to be perceived, but there was loss of sensibility to pain in both hands and both legs and feet. The muscular sense is changed. Romberg's symptom. Lying with closed eyes the patient could not tell the position of her legs. Disturbances of motion not perceived. Ataxia not present. Coarse strength of upper and lower extremities normal. By examination of the reflexes, it appears that the patellar reflexes of both sides are present, plain and in normal strength. An increase of the same is just as certainly excluded as a diminution. On questioning the patient, she said that the intense tired feeling and especially the painful vomiting which occurred

daily caused her to come under medical treatment." "The symptoms which have been described have continued up to this time almost unchanged, as I stated several days ago. Damage to the left eye also, as the result of optic atrophy, threatens.

"Finally, the third case concerns a letter-carrier, August W., from Sorgau, in Silesia, for whom I must thank my colleague, Thomas, in Freiburg. The history of his disease is briefly as follows: Fourteen years ago a chancre with secondary phenomena, violent pains in the legs, frightful pain as if pierced with a red-hot knife. Double vision lasting for one year and still existing, severe dizziness in the dark, slight tired feeling, no bladder-symptoms, virility retained, no gastric crises." "The investigation (October 27, 1885) gives: Strong, well-nourished man, with remarkably painful expression of the face, ptosis dextra, paralysis of the left abducens, optic of both sides normal, in the regions of the facial and hypoglossal nothing remarkable, no hemiatrophy of the tongue, sensibility of the face as well as taste normal. On the upper extremity, here and there, cutaneous analgesia; tactile and temperature sensation in the hands diminished. Patient cannot fasten small buttons at his toilet because he does not feel them plainly, widespread cutaneous analgesia of the feet, Romberg's symptom, walking with closed eyes impossible, *patellar reflex of both sides normal*, on the left perhaps somewhat increased. Cremaster and intestinal reflexes indistinct, plantar reflex active, diplopia and lancinating pain still present. A communication has been lately received from Dr. Thomas, according to which the patient has been for some time weak and bedridden. It was stated on the 24th of January that no change had occurred in the above phenomena." "That we have to do with *tabes dorsalis* in the two last cases (the proof of the first is furnished) appears to me to be without doubt. In Mrs. G. the degeneration has extended farther upwards than usual, and has attacked the ascending sensitive root of the right trigeminus. Perhaps the gastric crises which are here so specially distinct may be traced to an affection of the nucleus of the vagus, as Buzzard has supposed. In other respects the course of the case is typical. The same holds true for the letter-carrier, W., whose complex symptoms appear to render the diagnosis undoubted.

The retention of the patellar reflexes is the only thing remarkable in all three cases, and it is a question whether the first case established by

the autopsy is sufficient to make untenable the view of the localization of the phenomenon which has up to this time been accepted. *A priori*, I might doubt whether this is the case, for in an otherwise extremely extensive degeneration in the posterior columns, exactly the place which has been considered and described by Westphal and others as the anatomical site of the patellar reflexes can remain intact. I am so much the more inclined to this view, as in another case of *tabes* out of my private practice, which I am not at liberty to publish, *the patellar reflex on one side is retained*, while on the other it disappeared a year and a half ago.

"Here it is in the highest degree probable that we have to do with a one-sided degeneration of a portion of the posterior column. In any case I must refrain from a decided opinion until the undertaking of the microscopic investigation of case W.

"In conclusion, I remark that a few days ago I had an opportunity to describe my case orally to Privy Councillor Westphal. He explained to me, while at the same time demonstrating several symptoms, that he also was preparing observations on two cases belonging to this place, the publication of which had been delayed on account of illness."

35 UNIVERSITY PLACE.

THE TREATMENT OF BRIGHT'S DISEASES.*

BY F. A. BURRALL, M.D.

THE treatment of Bright's diseases has been partly derived from a knowledge of the pathology of these diseases indicated by post-mortem appearances, partly from examinations of the urine while the morbid changes were in progress, and some remedial measures are still empirical. The classifications of Bright's diseases are even yet so various and unsettled that, in considering the therapeutics of the disorders which come under this general appellation, it seems the most practical and direct method to subdivide all the lesions into the two varieties of *acute* and *chronic*, and refer separately to such remedies as are believed to be specially indicated in one form of renal degeneration more than in another. The treatment of complications also calls for a brief reference.

* Read before the Section on Materia Medica and Therapeutics, New York Academy of Medicine, December 15, 1886.

As a type of acute Bright's disease the parenchymatous form is most marked. This variety has also been termed croupal, catarrhal, desquamative, and tubal. Here there is an abnormal increase of blood in the organ, and the tubes are choked with casts and disintegrated tubular products. As a rule, the urine is diminished and albuminous, and there is more or less oedema, usually of the eyelids or face. These are the prominent pathological conditions present. As a result there is varying febrile disturbance, blood-poisoning caused by retained renal excreta is taking place, and the blood is also being deprived of its nutritious elements. The indications are to *rest the inflamed organs; remove retained excreta and wash out the obstructed tubes; restore the kidneys to their normal condition*, and prevent recurrence of attacks. The remedial measures are,—*rest* in bed in a room with a temperature of from 70° to 75°, *dry cups* to the loins, *sufficient diaphoresis, diuretics*, and suitable *cathartics* if constipation is present.

Rest is the first indication whenever inflammatory symptoms are present. By it the circulation is calmed and equalized, the nerves are soothed, and rest in bed surrounded by a warm temperature secures better action of the skin and places the patient under favorable circumstances for the application of remedies. Rest also diminishes the exudation of albumen.

Dry cupping to the loins relieves renal congestion and favors diuresis. By this temporary abstraction of blood into the subcutaneous capillaries a diminished pressure is produced in the lumbar arteries which supply the integuments of the loins, and this diverts a certain amount of blood from the renal arteries. The object of the cupping is to draw the blood into the capillaries, in order that it may be taken up and removed by the veins. The cups should be removed as soon as filled, and reapplied. No cups are better for the application of this remedy than the ordinary tumbler, which is always at hand. A good method of applying these is to dampen the bottom of the glass, so that the piece of loose dry cotton which is to occupy the bottom of the glass does not fall out when the cup is used. The skin is to be moistened with warm water, and the glass applied instantly after the cotton is lighted, when an excellent vacuum is produced and the integument rises into the glass. The cupping-glass with rubber bulb is also a convenient instrument for dry cupping. It has seemed to me that when the blood under the cups remained purple and stagnant

after their removal, this indicated marked renal congestion, and that the reddened integument more quickly recovered its color in proportion as those symptoms disappeared, which implied the presence of an excessive amount of blood in the kidney. I have not observed this sufficiently to be sure of the fact, but it was suggested by observation in several cases. Hot fomentations to the loins after the cups have been removed also relieve renal congestion.

There is a diversity of opinion with regard to the use of the hot-air bath. It has been said that by promoting perspiration so much fluid is carried away through the skin that an insufficient quantity remains to wash out the obstructed uriniferous tubes. This objection has been met by the reply that when there is much dropsical effusion free perspiration relieves renal congestion and promotes renal circulation by diminishing pressure in the renal vessels. As a result there is a more copious flow of urine. The amount of fluid lost by perspiration can be readily supplied by ingestion of water. The sympathy or supplementary relations between the skin and the kidney are well known, and it is admitted that the skin is an important organ for the elimination of urea. Hence, when the kidney is unable to perform this eliminative function, it would seem rational to stimulate the functions of the skin. My experience leads me to regard the *intermittent* hot-air bath as beneficial, but it is an agent better adapted to some cases than others. I think it is of service in the early part of an attack of nephritis and in impending convulsions, while if a patient is what is termed water-logged and anæmic it is less useful. Sometimes it produces great discomfort and no diaphoresis, and here it should be discontinued. Its use should be accompanied by the free drinking of water. The pack is somewhat similar in its action to the hot-air bath, but is often more soothing.

Stimulating *diuretics* are much less used than formerly in the treatment of this variety of Bright's diseases, since they are more likely to be injurious than beneficial, by increasing the congestion of the kidneys, which is already excessive. What is desired is to cause a sufficient amount of fluid to pass through the kidneys to wash out the retained excreta from the tubes. Water seeks the kidneys as one of its most usual channels of elimination, and this should be drunk freely. The water from some of the mineral springs in this country, such as the Bethesda, or Buffalo lithia, or Poland, also have an excellent diuretic action;

and when, as in some instances, there is an excess of uric acid in the blood, those waters which contain lithia are especially indicated. When, on examining the urine, we find numerous rough crystals of uric acid, we naturally infer that the aggregate effect of these minute jagged particles must be to irritate the delicate structures over which they pass, and that this irritation should be removed by dissolving them. Therefore there is a positive indication for a free use of water, or the dilute alkaline mineral waters, especially those containing lithia or potassium. Why waters which contain so small a proportion of salines should be preferable to pure water is not so well understood, but clinically I think this is demonstrated.

Water containing a small proportion of the bitartrate of potassium is sometimes used instead of the natural spring waters. To insure the diuretic action of salines their specific gravity should be less than 1028,—that is, less than that of the blood.

The drug most used in the therapeutics of Bright's disease for its diuretic action is digitalis, and the infusion is generally preferred. Digitalis does not possess intrinsic diuretic properties, yet its use is followed by marked excretion of urine. Long before its method of action was understood, it was regarded as the best remedy for that variety of renal disease in which there is congestion and tubal obstruction. Under such circumstances, in the stronger light of modern investigation, it is believed that "the contraction of the capillaries causes a greater quantity of blood to accumulate in the arteries, the difference of pressure between the arteries and veins will increase in favor of the former, and the blood will rush through the capillaries at a greater pace, and, owing to the pressure within the veins being lessened, the dropsical effusions will return to the venous system, and at the same time the watery constituents of the blood will increase and cause great diuresis." (Ackerman.)

The infusion is given in doses of from a dessertspoonful to a tablespoonful, three times daily, oftener in emergencies, and Stillé and Maisch direct that when it begins to act upon the kidneys, stomach, pulse, or bowels, the medicine should be discontinued or the dose greatly lessened. After diuresis has commenced, a dessertspoonful of the infusion, two or three times daily, promotes continuous diuresis. Some physicians use this drug much more freely than others, and it would seem as if the old idea of cumulative dangerous action

were mythical. It is probable, however, that its use is not devoid of danger, and we are advised that "the first symptom which warns us to omit the drug is irregularity in the rhythm of the pulse." (Binz.)

As the acute symptoms subside, or even earlier, the use of iron enters into the therapeutics of this renal disease. Iron is believed to act by checking hæmaturia, diminishing the general anæmia, and lessening the amount of albumen and casts. Its action is apparently general and local, although iron is said not to be detected in the urine after its use. The tincture of the muriate of iron is the preparation generally used. A point connected with the administration of this drug is its action upon the teeth. Recent experiments have shown that the enamel of teeth, when subjected to a watery solution of tincture of iron, is eroded, and this effect is prevented when the tincture is added to syrup or alcohol. For children the syrup of tolu is an excellent vehicle. A satisfactory method of preventing the injurious action of this medicine upon the teeth is to direct that the patient should rinse the mouth after the dose with a solution of bicarbonate of sodium. Other preparations of iron, such as the liquor ferri oxysulphatis, the syrup of the phosphate, "Basham's mixture," or the tincture of the chloride in combination with acetic acid and ammonia, are also recommended.

Cathartics may be of service in acute Bright's diseases, when there is an obstruction of the portal circulation and unassimilated nutriment is passing off through the kidneys, making the urine dense and irritating with urates or uric acid. It is desirable that all fluid passing through the kidney should be bland, and a cathartic which acts upon the liver promotes excretion of waste products through the intestinal canal. As a rule, drastic cathartics are not much used in acute Bright's disease. They are sometimes of temporary service in the emergency of acute uræmia, when $\frac{1}{4}$ grain of elaterium or 2 drops of croton oil will divert the serum, and with it the poisons which it contains, into the intestinal canal, and also by relieving renal congestion promote diuresis. The free catharsis produced by *pulvis purgans* is also of similar service.

For restoring the kidney to its normal condition a steady continuance in remedies and careful attention to diet and hygiene are requisite. The iron should be given regularly, with occasional intermissions, if constipation or plethora or nausea render it neces-

sary. Dry cups, applied twice or three times daily, ward off renal congestion, and digitalis promotes diuresis. A pad of flannel, worn over the loins, not thick enough to produce constant perspiration, but of sufficient thickness to insure warmth and protection against sudden chilling, is a most useful remedy. An interval is often left by the modern style of dress between the waistcoat and pantaloons, which exposes the loins to draughts and checks of perspiration, and if we notice the kidneys post mortem, we see how carefully nature has endeavored to protect them by a skilful covering of fat. It is, no doubt, of great importance to guard the loins against draughts of air and sudden changes of temperature.

Although some experiments have seemed to show that a milk diet is followed by the appearance of albumen in the urine, there is no doubt that there is no article of food which is more approved by physicians in this disease than skimmed or unskimmed cows' milk. Milk is bland, possesses the necessary elements of nutrition, and aids diuresis. With a milk diet there is less urea furnished to the blood. Milk is not a beverage but a food, and should be drunk slowly and well mixed with the saliva before swallowing. There are some patients who think they cannot take milk. If this condition, real or imaginary as it may be, is insurmountable, some other bland diet agreeable to the patient should be chosen, with the avoidance of strong tea, coffee, and alcohol. Koumyss is sometimes useful. *Too much* solid animal food is not allowable, since it furnishes an excessive nitrogenous basis for the formation of urea. Perfect assimilation is to be aimed at in selection of diet.

When patients are able, and to complete the cure of acute Bright's diseases, as well as to insure immunity from future attacks, residence for a time in a warm, dry, equable climate is of the greatest service. Meantime, the cupping, iron, and a careful attention to diet and hygiene should be maintained, and the urine examined at frequent intervals for the purpose of watching the progress of the disease and applying suitable remedies.

The treatment of *chronic nephritis* may be summarized as requiring *the improvement of general nutrition, the avoidance of acute attacks, and the treatment of symptoms and complications*. If we were asked to select two remedial measures in preference to all others, I think we should choose freedom from care, and residence in a dry, warm, equable climate. Where these conditions are even approximated, we

see life indefinitely prolonged in certain patients. But they are conditions difficult to attain. Care is the lot of humanity, and many sufferers from Bright's diseases are held to the various labors of life by domestic or financial ties. Such should, as far as may be, lead careful lives, and avoid cold, fatigue, and errors of diet. The clothing should be warm enough to prevent chilliness, but not so thick as to cause constant perspiration, and the feet should be kept dry. Milk is a most desirable diet in many cases, and can be made more palatable by the addition of a very small quantity of salt, or it may be peptonized, and the amount taken varies from two and one-half to four quarts daily, with which may be used a few ounces of farinaceous food. Light wines may be used judiciously in some cases of chronic nephritis. While there is remaining renal congestion, or scanty urine, or indications of choked tubules, dry cups and digitalis, with the moderately alkaline waters, should be used. Iron is indicated to avert the anæmia usually present. Diuretics are not required in the case of the cirrhotic or waxy, or in the atrophic stage of the parenchymatous, form of kidney-disease, except as an occasional scantiness of urine may occur, and some authorities hold that iron does not agree with patients who have the cirrhotic kidney, as well as cod-liver oil with the hypophosphites.

Some physicians think very highly of the bichloride of mercury in doses of from $\frac{1}{10}$ to $\frac{1}{8}$ of grain as a remedy in interstitial nephritis (cirrhotic kidney) and in the chronic form of parenchymatous variety of the disease.

Quinine, cod-liver oil, and nux vomica are given as tonics when the indications point to their use.

In the amyloid or waxy kidney, the iodide of potassium and mercury in small doses are recommended if any syphilitic history can be discovered, and the iodide of potassium, with cod-liver oil or the iodide of iron, are said to be serviceable when debility is present. Nitroglycerin has been found of service when increased vascular tension existed. Opium or morphine are remedies which are warmly endorsed on the one hand and regarded with caution on the other. Dickinson says that opium, which is dangerous in case of the granular kidney, may be freely used in the diarrhoea which accompanies waxy disease.

There are several plans of treatment for the *acute uræmia* and convulsions which may appear during the progress of any of the varieties of Bright's diseases. One method is

to relieve the system of retained urinary excreta by acting on the skin and bowels, and to quiet nervous excitability. Croton oil, jaborandi, or the hydrochlorate of pilocarpine, or elaterium, even blood-letting, and the hot-air bath or pack, and chloral to calm the nerves, represent the chief remedial agents under this head. On the other hand, opium or morphine are regarded as the remedies to be chiefly relied upon. The infusion of digitalis is to be given at the same time in $\frac{1}{2}$ -ounce doses every three hours until its specific effects are produced. It seems to me that all of these remedies may have their use in certain cases, but there is a feeling among many physicians that opium and pilocarpine should be employed with care. Dry cups to the chest are one of the best remedies in pulmonary oedema, and when the chest is covered with them prompt relief generally follows. For obstinate anasarca incisions into the cellular tissue are sometimes practised with much benefit, relieving swelling and promoting diuresis. It is advisable to bathe the incisions with an antiseptic lotion.

It is difficult to classify the principal remedies in use in Bright's diseases, since many fulfil several functions, but the following is an attempted approximation to indicate their chief effects:

Indirect Diuretics.—Digitalis, dry cups, cannabis indica (when hæmaturia is present), caffeine.

Direct Diuretics.—Potassæ bitart., scoparius, water and the alkaline spring-waters, tannate of sodium (gr. xx to xxx), apocynum cannabinum.

Diaphoretics.—Hot-air bath, the pack, warm baths, jaborandi, pilocarpine.

Tonics.—Quinine, iron, cod-liver oil, strychnine.

Medicines which diminish Albumen.—Gallic acid, hydrastis, iron, chloride of gold, fuchsin, and rosanilin.

Promoters of Tissue Metamorphosis (Metabolists).—Hyd. bichlorid., chloride of gold and sodium, potassii iodid., liq. potassæ (largely diluted).

Antispasmodics.—Chloral hydrate, opium, potassii bromid., hyd. c. creta (to prevent nausea).

Cathartics.—Elaterium and croton oil (hydragogue), euonymus (cholagogue), podophyllin (cholagogue), pulvis purgans, hyd. c. creta (laxative, Satterthwaite), 3 to 5 grs. daily in cirrhotic kidney.

The course of Bright's diseases is beset

with complications, and many cases require most careful watching. The treatment of them is partly that of the basic disease itself, and besides, the general remedies indicated for the various intercurrent maladies. Headache, nausea, gastritis, cardiac hypertrophy, serous inflammations, pneumonia, may all interfere with the comfort or partial health of the patient, and aggravate his sufferings or shorten his disease. They are more or less susceptible of alleviation.

In conclusion, the treatment of Bright's diseases, as of all others, is based upon our knowledge of their nature, and we are struck with the apparent deception connected with renal semeiology. It is not severe pain in the organ itself, but a blurred vision, an oedematous membrum tympani, hemicrania, a puffy eyelid, slight syncope, apparent dyspepsia, nervousness, slight enuresis, which are the signals of a distant morbid process. Often such symptoms are treated in vain, because the real disease is overlooked. It is well in making our diagnosis of any disease to bear these renal peculiarities always in mind. Then our treatment of diseases which seem to have no connection with renal disturbances will, more often than we would suppose, be directed to improving the functions of a diseased kidney.

ON LIGATION OF THE POPLITEAL ARTERY IN ELEPHANTIASIS OF THE LEG.

BY EMMANUEL DAGNINO, A.M., M.D., CARACAS, VENEZUELA.*

I.

IS there any etiological difference between the elephantiasis of the Greeks and that of the Arabians? Though in the actual state of science the general and constitutional causes of the one and of the other disease cannot be ascertained in a precise manner, perhaps it may be assumed that though both classes of elephantiasis, presenting the hypergenesis and proliferation of certain anatomical elements, cause the hypertrophy of some tissues, still they are not the same disease, the same nosological entity. Tuberculous leprosy (in all its varieties) is undoubtedly united to certain alterations of the spinal marrow.

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The experiments of Vulpian on the spinal cord, producing affections of the skin somewhat similar to the cutaneous manifestations of general elephantiasis, command reserve in regard to the diagnosis of some cases, and bring to the mind the conviction that general elephantiasis is undoubtedly allied to spinal alterations. The anæsthesia and hyperæsthesia, the atrophy and hypertrophy of a few tissues, that form the anatomical and pathological symptomatology of patients suffering from elephantiasis, are signs linked to the alterations of the nerves that animate and nourish those parts. This view, based on physiology and experimental physiology, that attributes to the spinal marrow and to the great sympathetic nerve so important and essential a part in that terrible illness, not thoroughly studied until now, would satisfactorily explain the influence of syphilis in producing tuberculous leprosy; for though it is true that in many cases, as I have been able to ascertain, the evident cause of that disease is the sudden cooling of the body when sweating, also it is true that in others, and very commonly, syphilis is the only cause to which I have been able to ascribe elephantiasis, without doubting in the least that, respecting others, contagion and hereditary disposition ought to be taken into consideration.

And now, is not visceral syphilis clearly demonstrated? It has also been proved that there are various syphilitic manifestations (sclerosis, sclerosis with patches and alterations of the gray and white nerve substances in different parts), bringing, as a consequence, functional and organic disorders, to be seen in the groups of symptoms characteristic of elephantiasis. In the history of many patients syphilis plays an important part. My opinion is that syphilis can bring about elephantiasis, just as suppression of sweat by water is a very frequent cause of it; in fact, probably the most common in warm climates. Among many cases I shall relate a very recent one:

N. N., a native of San Rafael, applied for treatment in the Hospital of the Casa de Beneficencia. The physician, Dr. Francisco Suarez, desired me to examine this patient, whose only sickness was blindness. He was a man in good health, of about 45 years, married, with several children, all healthy. For about two years the patient could not apply himself to work; he was a laborer. He had two capsulo-lenticular cataracts, and his eyes were in a satisfactory state. There being neither

pains, nor synechia, nor anything that might point out an unfavorable prognosis, I advised the operation of lineal extraction. Both eyes were equally capable of being operated on. I performed both operations, with the interval of ten days, in the presence of Dr. Suarez, the physician of the hospital, Dr. C. L. Sanchez, Dr. Giro, a Cuban, and the assistants of the same hospital. Both operations had the most brilliant success, and the patient left the place with his sight in an excellent state, and not one of the physicians could observe in him the least morbid appearance.

A year and a half ago a man, considered to be suffering from elephantiasis, went to my clinic of the Hospital of Chiquinquirá. Trying to form a complete anamnesis by a methodical inquiry, I found that he had never suffered from syphilis, and that the only serious thing he had experienced during his life was an operation that *I had* performed. Then I knew that the unfortunate man I had before me was the same one whose cataracts I had extracted, and who was then enjoying perfect sight. Far better would it have been for him never to have recovered his sight; for as soon as he left the hospital he had gone to his native village, and applied himself to mining to earn his family's livelihood; and being once busily occupied in his labor, all in a sweat and shirtless, received the rain that fell on his bare back. From that very day he felt unwell, and, little by little, supervened the symptoms and signs of this disease. After about three years and a half he was affected with elephantiasis, and being denounced as such to the authorities of the place, the board of health commissioned me to examine him. The unfortunate man was declared by the municipal physicians and myself to be affected with elephantiasis, and was consequently sent to the celebrated Lazaret of the island of Martires, in the lake.

I might mention similar cases. The same thing would happen with syphilis and contagion. Inheritance has a great influence in many cases of tubercular diathesis, for some members of families have been seen to be affected with pulmonary tubercles, others with elephantiasis, which in many of those affected with this complaint, above all in the atrophic form, often ends with pulmonary tubercular phthisis.

II.

The same causes cannot be assigned to partial or local elephantiasis, for it seems that the disease is only to be found in determined

localities, which would tend to prove that the causes are limited. It is impossible to extend one's self in a simple note, wishing only to record a few facts and observations that are not to be overlooked, as nothing ought to be despised that regards the sciences of observation and experimentation. In the locality of Maracaibo (the city, its environs, and adjacent villages) elephantiasis is very common; a proof of it being that the greatest part of those that are in the Lazaret come thence; and there are more than one hundred, besides those that pass unnoticed. Why does the same thing not happen with partial elephantiasis in the arms and legs? I have seen and treated several cases, but none from Maracaibo nor its adjacent villages, but from the Cordillera, the Distrito Sucre (Seccion Zulia), inhabited by colored people, and a case, if I mistake not, from Coro. I have seen partial elephantiasis of other organs in natives of Maracaibo (one single case), but none of the upper or lower limbs. The first and only case I saw was in the Hospital of Santa Ana, I being an externe, and one of my beloved teachers, Dr. Vicente Linarez, being physician of said hospital. The patient being a tall, lusty metis, having his left lower limb hypertrophied to such an extent that it resembled a big stump (pilon), an elephant leg. No treatment was successful, and the poor man left the hospital without my knowing whither he went, but of course feeling himself always as if he were bound to the earth by that enormous leg, that weighed perhaps as much as the rest of his body.

In 1867 a colored man from Sucre (then Gibraltar) made his appearance in the hospital under my charge, having his left upper limb affected with elephantiasis up to the third part of the arm. He could not support it, as he expressed himself, and begged for amputation as soon as possible, to get rid of that torment. I employed the iodides, *intus et extra*, arsenical preparations, compressive bandages, till I was able to prevail upon him to abandon the idea of having his limb amputated. He was a planter, always in the wet, but never had been affected with syphilis. I did not comply with the patient's wish, fearing that the operation would prove fatal. He then asked for his dismissal, which I granted. Several days after, I was invited by Dr. Francisco Suarez to go to the hospital under his direction to perform the amputation of an arm. At one o'clock P.M. I presented myself, with my assistants, internes of the hospital under my charge, Maniero and

Ramirez, and we three were surprised to meet with the same individual that had come to another hospital to demand the amputation I had refused. I frankly manifested my opinion to my friend and colleague; but he considered himself authorized to perform the operation, inasmuch as no remedy could free the desperate man from that burdensome arm. Declining for my part all responsibility, I performed the operation in the upper third, expecting to find there the tissues uninjured. I must say that the vessels were in perfectly good state, the ligatures were easily applied, the dressing according to the ordinary method employed at that time, and, though we all feared that the process of cicatrization would be unsuccessful, the healing was rapid and complete. The patient left the hospital and I lost sight of him.

About six or eight months after, the same person applied to the Hospital of Chiquinquira, where he was admitted. In the visit I met again with that unfortunate man, whose hopes had so soon vanished away, having then his left lower limb affected with elephantiasis. What had produced that terrible repullulation of the fatal disease? I do not know, but I noted down that fact, which I did not consider extraneous to the annals of science. I believe I have read something similar in an article of the Medical Dictionary in fifteen volumes, published from 1830 to 1835, and perhaps owing to that reminiscence I refused to accept the amputation. The general condition of the individual was bad: pallid, worn out, strengthless, destitute of digestive powers, in a diathetic state, having a lower limb enormously hypertrophied, with the characteristic aspect of elephantiasis; and lingering with a vespertine fever, died a few days after, not in the hospital, but in a village.

After I performed the amputation of the arm, and being convinced that the tissues of the stump were uninjured, excepting some connective tissue about the sheath that was hypertrophied, we proceeded to the dressing of the wound, and afterwards applied ourselves to the methodical inspection of the mutilated limb. In the first place we dissected the sheath, and found the artery and veins uninjured as far as we could follow them; but the lymphatic vessels were hypertrophied, soft to the touch and the scalpel, in all the length of the diseased limb, having a yellowish color, and in some parts rather pale gray. After the inspection, we concluded that the hypertrophied state called partial or local elephantiasis had its seat in the white vascular or lym-

phatic tissue. Is this hypertrophic disease a chronic lymphangitis? Is there any foreign element to the organism related to the places where this complaint is frequent (the Antilles)? Is it a parasitic disease that baffles all the therapeutical agents? I cannot say, and only wish to express my suspicions and doubts to scientific men; but whatever may be the extraneous cause, the anatomical tissue on which it acts is the tissue of the lymphatics.

How should we explain the metastasis of which I have spoken in this particular case? It is not probable that when the arm was amputated a germ of the disease should exist in the left lower limb; for, in the scrupulous inspection made over the body of the patient, none of the physicians observed the least thing that might point out the reappearance of the complaint in the left lower limb. This is certainly one of so many organic phenomena that are not to be scientifically explained. The mumps that descend to the pubic region, the phlegmon that appears sometimes in the calf of the leg in consequence of internal urethrotomy, the reappearance of some eruptions, as daily seen in medical practice, are positive phenomena not satisfactorily explained; but that fact has so far impressed my mind as to make me suspect that local elephantiasis may be allied to a general alteration of the liquids of the organism. In the second appearance of the disease, that man was not the same physiological subject; for in the first he was a healthy-looking man, excepting his burdensome arm, but in the second he had a sickly aspect and a deep alteration of the functions of nutrition. He was in a cachectic state. What had caused that change? I cannot tell, but some morbid element acted on that organism, infecting it, besides inducing hypertrophy of the left lower limb. So much darkness is to be dispelled only by gathering many similar facts and thoroughly studying them.

I entertained the conviction that this sickness was incurable, as the trial of the principal therapeutical agents, and even the amputation, had been altogether unsuccessful; but in 1873 I read in the *Bulletin de Thérapeutique* statistical information in regard to partial elephantiasis, in which the eminent observer proved that the ligation of the main artery in the diseased limb produced absolute amelioration, even the complete cure, according to several cases he had gathered.

The said paper mentioned about thirty successful cases of operation, and, on reading

those observations, I determined on trying the ligation in the first case that might present itself. The Casa de Beneficencia afforded it me,—a white, middle-aged man, from the Cordillera, who applied to that asylum on account of an enormous swelling of his left foot and leg. The physician of the hospital, Dr. Francisco Suarez, diagnosed partial elephantiasis, and was perfectly right in so doing, for the progress, the aspect, and all the circumstances of the case rendered this diagnosis evident, even to those destitute of experience. That patient was not only a subject of curiosity to the young students, internes and externes, but also a focus of infection to the hall where he had been placed, and a torment on account of the peculiar stench that came from him. The hypertrophy of the skin and of the subcutaneous tissue was such that the foot and leg were largely and deeply fissured, discharging a kind of yellowish serous pus, and diffusing an offensive and insupportable stench, that did not disappear even after applying the most powerful antiseptics. Dr. Suarez had submitted the case to the most energetic treatment, but without the slightest benefit. The physician had the kindness to put him under my care, and I proposed the ligation of the popliteal artery as the only resource, and both physician and patient accepted my opinion. Fixing the day for the operation, I performed it, assisted by several physicians and the internes and externes of the hospital, who now are all graduate and perhaps all remember well the case I describe, that must be registered in the annals of this asylum. The first case that was to be treated by ligation inspired natural curiosity. The disease had invaded all the leg and the popliteal region. The ligation could not be made according to the classical method, having to meet with abnormal difficulties, owing to the pathological state of the tissues. The skin was actually very thick, and a great portion of adipose tissue, hypertrophied and soft, formed a barrier before reaching the vessels that were imbedded in hypertrophied connective tissue, so that the incision had to be larger than ordinary, the artery being placed at a great depth. At last, having reached it, and isolating it, the needle was passed and the knot secured. The proper dressing was applied, the patient placed in the supine position, with the leg in a state of semiflexion.

The limb, of course, became rather cold, and I retired after prescribing the means of checking the effects of the sudden interrup-

tion of the circulation. On the following day I found nothing particular, only it seemed that the sero-purulent discharge produced by the fissures had diminished, as was also the case with the bad smell. After the lapse of about fifteen days the wound was healed without any inconvenience. By that time we were all convinced that the local complaint had evidently improved: the fissures disappeared, the skin looked thinner, and the color of the limb was more like the natural. The operation had favorably influenced that desperate case, therapeutically considered. Two months after the operation the patient walked freely about the hospital, and one day was dismissed, not by the physician, but by the director, his place being wanted for a patient that urgently required it. This was my first case of this class, and a very successful one indeed.

Some time afterwards I had in the hospital under my charge a case of elephantiasis of both legs, a white man from the Cordillera, 45 years of age, who was in a similar condition to the former patient, and, having proposed the operation, he submitted to it. I performed the ligation of the left popliteal artery in the presence of several physicians and students in service, not considering it prudent to proceed to both ligatures on the same day. This operation was perfectly well performed in the space of twenty minutes, having had the aid of Drs. Sanchez, Rincón, C. Oguendo, and others. The case was a very happy one in its results; and the patient seeing that in a short time his leg and foot tended to regain the normal form, asked for the second operation, which I ceded to Dr. Rincón, a skilful operator in the service of the hospital, who, having the aid of Dr. Oguendo, performed the ligation of the artery in the other limb, with the same successful result as the former. That man left the hospital nearly in perfect health, after having suffered a severe attack of yellow fever, which he recovered from.

These three cases of ligation of the popliteal to cure elephantiasis of the leg must be taken into consideration by those who practise in places where this disease is frequent or endemic. The ligature of the lingual has been recommended against the epithelioma of the tongue (its point). From the results I have obtained in the ligation of the popliteal, I am inclined to advise it before trying the amputation that nearly always brings but a transient cure, for soon after it the infected submaxillary ganglions announce the reap-

pearance of the terrible evil in another very important region.

CURE OF AN ANEURISM BY SUBCUTANEOUS INJECTIONS OF ALCOHOL.

In a case of extensively branching aneurism of the vessels of the occipital region, which had endured seventeen years, resisting all treatment, PLESSING injected alcohol with good results. Beginning with a thirty per cent. solution every two days, he soon increased the strength of the solution to seventy-five per cent., allowing a longer time to elapse between the injections.

In commencing the treatment, a dose of 20 minims was injected in four or six points of the tumor at one-half an inch from its border.

Pain, moderately severe, followed, but ceased in half an hour.

As the tumor became smaller and harder, the injections were made more nearly in the centre.

In two weeks' time a firm infiltration had formed about the tumor's margin, the skin was less tense, and the pulsations weaker.

In about a month, after the use of six ounces of fluid, the tumor was a firm mass, which showed pulsation in two points only: a necrosis of the skin occurred at these points, and erysipelas spread from these lesions. The infiltration of tissue partly disappeared; the pulsation did not return. In two months' time the patient was cured, and several months have elapsed without a recurrence. Pulsation and infiltration have alike disappeared.—*Deutsche Medicinal Zeitung*, November 25, 1886.

PEPTONE SUPPOSITORIES.

SAUTER prepares these suppositories with cacao butter, each containing twenty-five grains of peptone: they are mixed, and kept cold to prevent the fat from becoming rancid.

In cases where patients cannot be nourished in the normal manner, they serve an excellent purpose, fifteen grains of dried peptone equalling two and one-half drachms of meat in nutritive value.

Children may be given one suppository four times daily; grown persons, two three times daily. The suppository should be lubricated with olive oil, and the rectum previously cleansed by an enema.—*Pharmaceutische Post*, November 20, 1886.

The Therapeutic Gazette

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PHILADELPHIA.

DETROIT, MICH., Feb. 15, 1887.

GEO. S. DAVIS, Medical Publisher, Box 470.

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Editorial communications should be addressed 1025 Chestnut Street, Philadelphia. Business communications should be addressed to the publisher.

Leading Articles.

DOSAGE.

IN the reading of a suggestive address upon the present state of therapeutics given by Dr. William Whitla, before the Ulster Medical Society, our attention was forcibly attracted by an account of his experience in one of the London hospitals. A brilliant clinical lecturer, speaking of the treatment of chorea, said, "From what I know and have seen of the pathology of chorea, I did not believe that arsenic could be of the slightest use to it; nevertheless, I determined to prove it, and I have demonstrated the fallacy which some men still cling to. I treated so many cases of chorea with teaspoonful doses of aqua camphora, and a similar series with arsenic, and the results were precisely similar. My large class of students have taken a deep interest in the experiments, and you can ask any of them do they believe in arsenic now." Possibly the distinguished physician knew positively very little about the pathology of chorea, certainly he failed to comprehend at all the therapeutics of the disease; for Dr. Whitla found that he was giving Fowler's solution in exceedingly small doses, whereas it is perfectly established that to have an

effect the arsenical solution in chorea must be administered in ascending doses until it produces puffiness about the eyes, albuminuria, or a marked gastro-intestinal disturbance, or, in other words, until it produces slight toxic effects. For the successful treatment of a disease the right remedy must not only be employed, but it must be given in the proper dose and in the right manner. Very frequently it is essential to produce distinct physiological effects of the drug; but in some cases a long-continued mild influence is necessary. Sometimes a single hard physiological blow will produce an effect not to be obtained by even a very continuous repetition of slighter blows, precisely as a rotten log may yield to a single powerful blow from the axe, but receive innumerable taps without splitting.

Although the subject has been so often written upon, and is so familiar as to be trite, yet possibly a few practical illustrations of the remarks just made may be of some service to some of our readers. At least in this part of the world strychnine is frequently prescribed in doses of a 40th to a 60th of a grain as a tonic during the convalescence of acute diseases, or during the nervous exhaustion which so frequently results from overstrain, or from the long-continued effect of hard work and cold weather during a long winter. In the amounts named the alkaloid is probably serviceable as a simple bitter in increasing the tone of the digestive organs, but that it has any general effect upon the vaso-motor system or upon the general nutrition is highly problematical. As an ordinary dose, $\frac{1}{10}$ of a grain of strychnine is not too large. We have given it three times a day in cases innumerable, and have never in more than one or two cases seen any evidences of its peculiar physiological action. When, as in protracted convalescence, or in extreme nervous exhaustion, or in the rapid loss of power of the spinal cord sometimes produced by metal-poisoning, a pronounced strychnic effect is desired, the doses should be rapidly increased until slight muscular stiffness, general unrest, or other evidences of toxic effect be manifested.

Some years ago it was our fortune to see a case in which after an acute illness the patient failed utterly to recover. Weeks went by, and there was no gain of strength or nutrition, although there was no disease present. Strychnine had been given in doses of $\frac{1}{10}$ of a grain three times a day. The nurse was ordered to give four granules a day, but thought that the physician meant to give four granules at a dose. The result after the third dose was a

decided but not serious attack of strychnine-poisoning, the secondary effect being that in two or three days the patient gained a great deal more in strength and general tone than he had previously in as many weeks, and in a very short time was practically well.

Not long ago we were called to a child five years old, suffering from violent sore throat and acute enlargement of the cervical glands, but without faucial exudation. We ordered two drops of tincture of belladonna to be given every two hours until our next visit unless some evidences of its action appeared. It so happened that the directions were plainly written upon paper, but the nurse gave 20 drops of the tincture until the child had taken 80 drops. A distinct poisoning resulted, though the symptoms were not very alarming and did not require treatment. The enlargement of the cervical glands and the sore throat disappeared in the night.

We sincerely trust that the lesson we are attempting to inculcate in this editorial will not be misunderstood. It is not that medicine should be given in indiscriminately large doses; it is that the physician should study the dose as carefully as the disease or selection of its remedy, and should adapt the dose, to the needs of the patient. We have seen a very minute dose exactly meet the requirements when a large dose of the same remedy would do harm. Thus, whilst in chorea arsenic must be given in overwhelming dose, in certain conditions of the mucous membranes, especially of the throat, good is achieved by giving very small amounts of the alterative for a length of time. There are certain persons whose throats become inflamed upon the least exposure to cold, the attacks yielding readily to treatment, but continually recurring. One or two drops of Fowler's solution given three times a day for four or five months will often so modify the constitution of the patient that the throat will remain well. The matter is one of considerable importance, since it is probably possible sometimes to stave off or prevent serious disease of the pulmonary mucous membrane which may end in a chronic consumption.

The excessive administration of medicines is a great evil. The physician should know just as well when to withhold as when to give. Boldness should be tempered by caution, and caution should be upheld by boldness.

VENESECTION.

WE have recently received the first volume of the "*Travaux du Laboratoire*," Université de Liège, under the editorship of Professor Fredericq. The volume contains researches of interest, most of them too purely physiological to be discussed in detail in our columns. There is, however, an elaborate study of the effect of the abstraction of blood which has a direct bearing upon practical therapeutics. Professor Fredericq finds that the effect of bleeding upon the cardiac pulsations is produced through the pneumogastric nerve, and varies in different animals according to the power of this nerve. In the dog and the pig the cardiac pulsations are accelerated and become uniform. In the ox and probably also in man the pulsations are simply accelerated. In the rabbit, in which the pneumogastric nerves have little power, the cardiac rhythm is not influenced. Contrary to opinions generally received, and based upon experiments made in the dog, in the rabbit the arterial pressure is greatly and enduringly lessened by a bleeding which does not exceed one per cent. of the body weight.

The effect of the bleeding upon the respiratory changes and upon calorification varies according to the state of the animal. In the rabbit during digestion bleeding produces marked lessening in the amount of oxygen consumed and the carbonic acid liberated, also in the amount of heat which is radiated from the animal when placed in a calorimeter. In the fasting rabbit the decrease in the consumption of oxygen is only momentary. In a little time the interstitial combustion rises again and frequently passes much beyond what it had been before bleeding. The animal put in the calorimeter gives off more heat than before the bleeding, although the rectal temperature is usually distinctly abated. It would seem, therefore, that bleeding gives rise to the dilatation of the cutaneous vessels.

Professor Fredericq conceives that his researches warrant the following conclusions:

First.—That it is only proper to employ bleeding to lessen the mass of blood when there is intense pulmonary, cerebral, or other congestion which demands immediate relief. That under these circumstances the bleeding simply is a means of putting aside an immediate danger.

Second.—That when, as in pulmonary œdema or in acute pneumonia, or in pleurisy, there is a sudden outpouring from the blood, bleeding

may do good by leading to the absorption of interstitial lymph.

Third.—Although in the dog the effects of bleeding upon the blood-vessels are so transitory, yet their permanency in the rabbit indicates that they may also in man be enduring, and therefore it is not irrational to withdraw blood when there is high vascular tension and imminent cerebral congestion or apoplexy.

Fourth.—That though the effect of bleeding upon the calorification might at first thought seem to indicate a field for usefulness in the treatment of febrile and inflammatory disorders, yet as bleeding seems to produce excessive destruction of the albuminous substances of the system, and therefore acts like fever, its employment for the lessening of fever is a very doubtful procedure.

STROPHANTHUS.

IN a previous issue we have already alluded to the cardiac stimulating powers claimed to be possessed by this drug. Unfortunately, the plant has been only obtained with great difficulty. There seems also to be considerable doubt as to what form of preparation is therapeutically most active, and we find various drug firms are using different parts of the plant for preparing the tincture, although Prof. Fraser has claimed that the seeds alone contain the active principle of this drug.

Dr. Fraser's formula for making this tincture is that one ounce of seeds, first deprived of their oil or fat by means of ether, in which the active principle is insoluble, is percolated by rectified spirits to produce eight fluidounces of tincture. Dr. Fraser has used tinctures of varied strength, but, finding the above too concentrated for convenient use, recommends one in which one part of the seeds alone without the hairs should be percolated with ten parts of rectified spirit, the dose of this tincture being 4 to 8 minims. He is especially emphatic in stating that the seeds and pods should not be used together, for, although the pods contain active principles, the relation of the tincture obtained from them and the tincture made from the seeds has not been determined.

Mr. W. Martindale, writing in the *Pharmaceutical Journal and Transactions* for November 20, 1886, states that he has examined tinctures prepared from the seeds, from the pericarp, and from the hairs, and, though he has found that all these parts contain the active principle, the tincture prepared from

the hairs is weakest, and that from the seeds is the strongest, in acting on the heart-muscle. They are also all of them powerful muscle-poisons, and, according to the statement of Mr. T. F. Bradford, this particularly applies to the pod tincture, but more experiments are needed to decide accurately their relative value. As the drug is an extremely expensive one, it is evident therefore that if other parts of this plant, in addition to the seeds, contain the active principle, they might for the sake of economy be used for preparing the active principle.

In this country Dr. C. L. Dana has extended our knowledge of the action of this plant through the report of a series of cases read before the Practitioners' Society of New York, on December 3, 1886 (*Medical Record*, December 18, 1886), in which he has used the drug. In one or two cases of Bright's disease in which Dr. Dana used this drug little or no striking benefit was observed as regards the cardiac irregularity and weakness, while in three cardiac cases progressive improvement occurred while the drug was being administered. In two cases marked improvement occurred after strophanthus was administered, while previously no special improvement was observed, three cardiac tonics having been already tried without avail in one case and two in the other.

Dr. A. A. Smith also stated that strophanthus had been used in the wards of Bellevue Hospital. In two cases of pulmonary oedema it was administered with good results. The first was a case of mitral systolic and double aortic lesion in which pulmonary oedema developed after unusual exertion. Five minims of the tincture were given every four hours, and the patient recovered. He also reported a case of pulmonary oedema occurring in pneumonia, and a case of emphysema, in which this drug appeared to produce excellent results.

Dr. Beverley Robinson at the same meeting read notes of twelve cases in which strophanthus was used with success, even in some instances after other cardiac tonics had failed to produce any result, though perhaps it is worthy of note that often the mere change from one cardiac tonic to another will increase the quantity of urine for a day or two, or more.

In this connection it is worthy of note that two enterprising English drug firms expect to become millionnaires at the expense of the public through the sale of this drug. We learn that these firms claim to have "cornered" the market in strophanthus, and have so advanced

its price as to make at present, in view of the uncertainty of its action, any ordering of the new heart-tonic in physicians' prescriptions entirely unwarranted. The present market price of the tincture of *strophanthus*—and it is to be noted that no definite strength is announced—is one dollar per ounce. Now, even if we admit that this tincture is made from the clear seeds and in the proportion first recommended by Prof. Fraser,—*i.e.*, one pound of seeds to eight pints of spirit,—that would bring the price of the seeds to one hundred and twenty-eight dollars per pound. We further learn that the English firms which are thus attempting to fleece the general public are offering the clear seed at one hundred and sixty shillings (forty dollars) per pound; and recollecting that the manufacturers of the tincture do not state that this tincture is made from the seeds alone, and that Dr. Fraser has more recently recommended a much more dilute tincture, it is evident that the profit made in this transaction must be simply enormous, provided the medical profession can be gulled into playing into the hands of such extortioners.

It is highly probable that this drug may prove to be a valuable adjuvant to our other means of treating a weak heart; but neither we nor our patients are compelled to rely on it alone, and until the manufacturing druggists learn that the medical profession cannot be played as puppets to fill their pockets, *Strophanthus Hispidus* should be let severely alone.

PILOCARPINE AS A GALACTAGOGUE.

TO a philosophical lover of his race few things are more disheartening or more saddening than a puling, whining, emaciated shadow of a baby dragging a fraudulent food from a no less fraudulent teat encasing the yawning mouth of the flinty bottle. Cheated in the very beginning of his life, the unfortunate being draws in, but not with his mother's milk, his first lessons of fraud. This disheartening spectacle is almost universal among the upper classes of Americans. In the race for civilization and culture the lacteal glands seem to have been left entirely behind. Any one, therefore, who would discover a medicinal or other method of bringing about an Eve-like development to our American women would confer a great boon upon the rising humanity, though he might incur the anathemas of the numerous manufacturers who batten upon the sufferings of

the young and the deficiencies of the old. Castor oil leaves, faradization, ale, milk, and the various remedial measures employed by the laity and the profession to remedy the great and growing evil have in the past amounted to nothing. We therefore, with not altogether untempered hopefulness, call the attention of our readers to the investigations of M. Chéron, who has studied the action of pilocarpine upon the mammary glands, and believes that he has found in it a specific. The treatment has been practised by him in nine cases with satisfactory results in all but one. Five centigrammes of the nitrate of pilocarpine were hypodermically injected as soon as the milk became scanty, whether this took place suddenly or by degrees. The injection was repeated every day. Under its influence the skin of the face and, afterwards, that of the body became hot for a few moments, but there was seldom any moisture. It is essential to success not to produce diaphoresis. If the scantiness of secretion has existed for some time, ten or twelve injections are required; on the other hand, if it has come on suddenly, two or three will suffice. The treatment had no ill effect either on the nurse or the nursling.

A NEW LOCAL ANÆSTHETIC.

IT is well known in Southern Australia that a great many sheep and cattle are annually killed by eating *Euphorbia Drummondii*, which is very poisonous, according to the quantity of milky juice which it contains. It appears from the statement of Dr. Schomborgh that sheep, bullocks, and horses die in from twenty-four hours to seven days after eating it. They present paralysis of the extremities, hanging of the head as if tipsy, while the body does not seem to be impaired. At first the weed is avoided, and taken only on account of extreme hunger, but afterwards it is sought after and eaten with great avidity.

Dr. John Reid, of Germein, announces in the *Australasian Medical Gazette*, No. 61, 1886, the discovery of an anæsthetic alkaloid in this plant, which he terms drumine. The method which he employs for the isolation of this alkaloid is to make a tincture, which, after standing for a few days, is evaporated to get rid of the spirit, ammonia added in excess, and the solution filtered. The residue, after the ammoniacal odor has disappeared, is dissolved in diluted hydrochloric acid, and the filtrate is filtered through animal charcoal to

destroy the abundant coloring-matter. The filtrate is evaporated slowly, and leaves the alkaloid. This alkaloid deposits from solutions in acicular and stellate crystals with little taste, freely soluble in chloroform and water. The crystals deposited from the hydrochloric acid solution and filtered through animal charcoal are circular or boat-shaped at the circumference, and stellate, or perhaps more correctly, disks, as if formed of concentric circles, with radiating fissures. They are colorless, and under a high power of the microscope the acicular crystals are in some cases rhomboid in shape. Dr. Reid thinks that perhaps this difference in shape, and the different degrees of solubility of these different-shaped crystals in chloroform, would perhaps indicate that two alkaloids are present, but his researches have not yet enabled him to speak positively on this point.

Experimenting on cats, Dr. Reid found that on placing a few drops of a four per cent. watery solution of this alkaloid in one of the eyes, in a few moments it was tolerant of contact with the finger, while the pupil was not appreciably dilated. In another instance he injected 3 grains subcutaneously in the back, and, apart from anæsthesia, with the production of no apparent effect. The following day he states that he gave a large dose to the same animal, but does not name the quantity, and in a few moments the legs were completely paralyzed, while breathing was slow and performed with difficulty. As the animal was apparently dying, strychnine was injected, and produced only a few fibrillary twitchings of the face-muscles, but no general convulsion, and death soon followed. Dr. Reid also experimented with this drug upon himself, trying it upon his tongue, nostrils, and hand, and found very marked anæsthesia in all cases, even the sense of taste and the bitterness of quinine being abolished on the side of the tongue to which it was applied. Taken internally, he found that small doses, although he does not say in what quantities it was administered, produced no constitutional effects. In a case of sciatica in an old man, a subcutaneous injection of 4 minims of a four per cent. solution relieved the pain. He also employed it in a case of catarrhal jaundice, relieving the pain and tenderness in the stomach, and in neuralgic tic it has produced successful results by dropping it in the eye.

It is to be regretted that Dr. Reid's experiments are so crude, and show such entire ignorance of the commonest methods of pharmacological investigation, as to give no reliable

conception as to what is the action of this alkaloid. It is to be hoped that the plant will be subjected to a renewed analysis that Dr. Reid's statements may be confirmed or disproved, and that the alkaloid, if such be present, be subjected to thorough physiological and clinical examination.

WE welcome to our exchange table the new journal of *Laryngology and Rhinology*, which is to be edited by Drs. Morell Mackenzie and B. Norris Wolfenden, and published monthly by the Churchills, of London, and P. Blakiston, Son & Co., of Philadelphia. We should suppose that the journal would be an absolute necessity to all those who treat diseases of the throat and nose. It is chiefly composed of abstracts from the world's recent literature, and reports of the transactions of French, German, English, and American societies. To us it appears to thoroughly represent the current thought on the subject.

Reports on Therapeutic Progress.

THE ANTISEPTIC TREATMENT OF SUMMER DIARRHŒA.

At the annual meeting of the New York Academy of Medicine, held January 6, 1887, Dr. L. EMMETT HOLT read a paper on the "Antiseptic Treatment of Summer Diarrhœa" (*Medical Record*, January 15, 1887). The speaker stated that he did not undervalue other methods of treatment than the use of drugs, such as careful feeding, change of air, etc., but the object of the paper was to discuss what additional measures were useful.

All the causes of summer diarrhœa—excessive heat, improper or artificial feeding, and bad hygienic surroundings—united to produce a dyspeptic condition, which was really at the bottom of nearly all of these cases. The age showed it could not be heat alone, for the disease was not frequent at the most tender age,—under six months. Of 431 cases, only twelve per cent. were under six months, while fifty-nine per cent. were between six months and two years. The explanation was that under six months most of the children were fed at the breast. Improper and artificial feeding was quite as important as heat, as Hope had found in 591 fatal cases that only 28 had no food but the breast.

Heat depressed vital energy, increased de-

composition in the streets and sewers, and thus vitiated the atmosphere; but, most of all, it produced in the food given to young children putrefactive changes before it was taken into the stomach.

This was especially likely to occur with milk. One instance was cited of every one of twenty-three healthy children being taken in one day with diarrhoea from bad milk.

Closely related to this subject were the poisons produced from food, or ptomaines. Brunton had stated that most of the alkaloids produced from the decomposition of albumen caused diarrhoea. It was believed that many of the nervous symptoms in summer diarrhoea had their explanation in the effects of these alkaloids. This was true especially where the discharges were abruptly arrested, either spontaneously or by opium. They were to be looked upon as a form of toxæmia.

The inflammatory changes found in the intestine were to be looked upon as a consequence of the diarrhoea rather than the cause of it. The most marked lesions were always found in the cæcum and sigmoid flexure, just where the irritating substances were longest detained in their passage.

Immense numbers of bacteria were found in the discharges, but no sufficient evidence had yet been adduced to establish the existence of a special microbe as a causative agent.

The indications for treatment were four: 1. To clear out the bowels. 2. To stop decomposition. 3. To restore healthy action in the alimentary tract. 4. To treat the consequential lesions.

It was proper to begin with a cathartic in all cases unless the stomach was very irritable. Castor oil was by far the best. If much vomiting were present, a copious injection of water, enough to wash out the colon, should be given.

Many mild cases could be cured by the oil alone, provided suitable dietetic regulations afterwards could be carried out. In severe ones it gave only temporary benefit.

For the second and third indications an antiseptic should be given and the diet carefully regulated. The best antiseptics were sodium salicylate and naphthalin. The former should be given in doses of 1 to 3 grains, according to the age of the child, every two hours, and the latter in about double the dose.

If vomiting were present, all food should be stopped for from twelve to twenty-four hours, and thirst quenched by thin barley-

gruel or mineral-waters,—cold, and in small quantities.

Unless the child were upon the breast, in which case it should, of course, be kept there, it was better to *withhold milk entirely*. Wine-
whey, animal broths, expressed beef-juice, or even raw beef, could be used, and were usually sufficient.

To meet the fourth indication—*i.e.*, to treat the lesions—astringents by the mouth were useless, with the possible exception of bismuth. The diet should be as carefully looked to in chronic cases as in acute. The antiseptic should be continued, to check fermentation and decomposition in the intestine, and the large intestine should be washed out once a day with pure water or a weak antiseptic or astringent solution.

Attention was called to the fact that, except opium, nearly all the drugs which had held their place in the treatment of this disease were antiseptics of more or less power. Bismuth, calomel, the mineral acids, iron and silver salts were cited. Pure antiseptics had been used in the treatment of diarrhoeal diseases since 1846. Creasote was first employed, and with great success both in England and in this country. Ten or fifteen years ago salicin was largely used, especially in the South, with uniformly good results, particularly in chronic cases. The use of salicylic acid and its salts, the bichloride of mercury, and naphthalin was also referred to. The last was of latest introduction, and seemed likely to prove of very great value, perhaps the most valuable of all.

Notwithstanding the successful results obtained by antiseptics, the great majority of the text-books still advocated the old plan of the use of opium and astringents as fifty years ago. An inquiry into the public practice of this city showed that in fourteen institutions and dispensaries, where it was estimated that twenty-five thousand children were treated yearly for diarrhoeal diseases, the main reliance was still upon opium, bismuth, chalk mixture, and castor oil.

The speaker had tabulated 300 cases of his own treated by such remedies. Of these, 50 per cent. were cured; 27 per cent. improved; 18 per cent. unimproved; and 7 per cent. died. During the past year he had treated 81 similar cases by an initial dose of castor oil, followed by salicylate of sodium, these being the only drugs used. Of these, 84 per cent. were cured; 7 per cent. improved; 7 per cent. unimproved; 1.2 per cent. died. Forty-four cases were treated by naphthalin,

usually preceded by the oil. Of these, 67 per cent. were cured; 15 per cent. improved; 13 per cent. unimproved; and 2 per cent. died. Resorcin was used in a similar manner in 27 cases. Of these, 55 per cent. were cured; 22 per cent. improved; 22 per cent. unimproved; and none died.

The duration of the disease in these cases before treatment was about the same in each class. The duration of treatment in the cured cases was much shorter by sodium salicylate than by the use of opium, astringents, etc. In cases of long standing the very great superiority of the salicylate and naphthalin was clearly shown. Resorcin was much inferior to the drugs just mentioned.

The following conclusions were drawn from the paper:

First.—Summer diarrhoea is not to be regarded as a disease depending upon a single morbid agent.

Second.—The remote causes are many,—heat, improper and artificial feeding, bad hygiene, etc.

Third.—The immediate cause is the putrefactive changes which take place in the stomach and bowels in food not digested, which changes often are begun outside the body.

Fourth.—These products may act as systemic poisons, or the particles may cause local irritation and inflammation of the intestine.

Fifth.—The routine use of opium and astringents is not only useless, but, especially at the outset, may do positive harm; since, by checking peristalsis, opium stops elimination and increases decomposition.

Sixth.—Evacuants are to be considered an essential part of the antiseptic treatment.

Seventh.—The salts of salicylic acid and naphthalin are the antiseptics which, thus far, seem to be best adapted to the treatment of diarrhoeal diseases.

DR. R. W. WILCOX spoke especially with reference to the use of naphthalin in diarrhoea in adults. Since reading Rossbach's paper in the *Berliner Klinische Wochenschrift*, in November, 1884, he had used naphthalin in thirty-two cases, nearly all being in adults. He had come to feel as much confidence in the use of this drug, under certain circumstances, as in the use of mercury or the iodides in syphilis or of quinine in intermittent fever. As mercury and quinine may fail to accomplish their work if used without observance of a few well-known precautions, so naphthalin may fail if improperly employed. The most frequent cause of failure has been

the use of too small quantities, less than 60 grains daily being a needless waste of a very good medicine. He had given up to 120 grains during the twenty-four hours in divided doses, usually in starch capsules with a small quantity of oil of bergamot to conceal the somewhat unpleasant odor. If the impurities of the drug are removed by washing with alcohol, no such untoward effects as have been occasionally reported in the journals will occur. Frequently during its administration the urine will assume a smoky color, resembling that of acute nephritis, but a careful examination will fail to detect either albumen or casts.

In chronic diarrhoeas he had used naphthalin as the only drug in twenty-one cases. Nearly all degrees and varieties had been represented; some could be traced back to an acute process, others were the result of improper food or followed debilitating diseases.

He related one case: James D., messenger, 18 years of age, came to him, complaining of a diarrhoea of over two years' duration. Its commencement was in the second summer previous to his first visit. The assigned cause was overindulgence in unripe or spoiled fruit. The trouble had continued through the following winter, with intervals of cessation, and had been aggravated the following summer. Since summer his loss of flesh, previously considerable, had increased, his tongue was heavily coated, the appetite poor; his discharges were five to six daily, unformed, varying much in amount, sometimes watery, very foul-smelling, much gas, no tenesmus, no blood; pain at times, but no fever. Although he was in a deplorable condition, and so long as his work remained severe and his food unsuitable recovery seemed impossible, by the use of 60 grains of naphthalin daily the number of movements were reduced, within a week, to two daily, and, for the first time, became formed and devoid of odor. About six months afterwards he reported that after three weeks he had discontinued his medicine, having had no further necessity for using it.

In *chronic dysentery* he had used naphthalin in seven cases, with excellent results. The most interesting case was that of James C., 66 years of age, who contracted dysentery while serving in the Federal army in 1862-64. He had never been free from the disease except for a few weeks at intervals. He could remember no day during which he had not had more than one passage. He was ema-

ciated, with sallow, dirty skin, marked tenesmus, abdomen painful on pressure, red tongue, pulse very feeble, no appetite. His stools averaged seven movements daily,—slimy, blood-stained, of extremely foul odor. This man had 90 grains of naphthalin daily, and at the end of the month he would have hardly been recognized as the same man. Four months after he reported himself so much improved that he considered himself a well man.

His experience in the diarrhoea of *typhoid fever* had been limited to two cases: Charles B., 25 years of age, and John F., 16 years of age, both of whom he saw for the first time in the third week, the diagnosis being thoroughly established. In both there was commencing tympanites; diarrhoea, to the extent of six to ten passages in the twenty-four hours. Naphthalin was administered up to 60 and 90 grains in the day, with the result of "stiffening up" the motions and reducing them to two daily. The odor of the stools, in both cases, was lost. In fact, he felt so confident that the intestinal canal and, consequently, the fæces were disinfected that he did not take any other precautions. He also directed attention to the antipyretic effect of this drug. In general, the use of antipyretics in typhoid fever he considers unsafe; but if the practitioner was thoroughly imbued with the idea that he must use an antipyretic, let him use naphthalin, which reduces temperature, indirectly, by disinfection of the intestine. In point of safety it compared favorably with such drugs as antifebrin, thallin, antipyrin, etc. Whether typhoid fever had ever been aborted by this or any other drug he did not pretend to say; but if it could be accomplished, in his opinion, naphthalin, by its vigorous action upon the contents of the alimentary canal, should tend to that result.

Of the use of naphthalin in acute intestinal catarrhs, and in the diarrhoeas of children, he had had no experience. In the diarrhoea of chronic tuberculosis he had had no opportunities for experiment. In all his cases of diarrhoea evidences of tuberculosis in other organs were sought for, but were not found. He would emphasize the claims of naphthalin as *the* drug to use in all cases in which it was necessary to disinfect the alimentary canal, as in typhoid fever, intestinal catarrhs, and dysentery, because it seems to be, of all the drugs at our disposal, the most certain, and at the same time the one most free from danger.

THE MEDICATION OF PHTHISIS.

In a recent number of the *Progrès Médical* the editor discusses the changes in the treatment of phthisis which modern pathological researches would indicate. Recent suggestions in antibacilli treatment are the inhalation of hydrofluoric acid and the rectal injection of sulphurous gas.

We are able, however, to hope for very little from these methods.

The means for combating tuberculosis which seems most worthy of serious attention is the use of iodoform.

This substance has been tested by injection in cold abscesses, by inunction in tubercular meningitis, and internally given in enlarged glands and pulmonary tuberculosis. The purity in which iodoform is now made, our better knowledge of its solubility, and its poisonous properties, enable us to use it as a most important agent in the extirpation of a local tuberculosis before the organism can become affected; it has thus an important part in preventive and hygienic medication.

We must agree with Jaccoud in placing the administration of nutritious elements as still our most important duty to the phthisical patient. Cod-liver oil, to the extent of 4 ounces daily, is of the greatest benefit, and especially those oils which contain iodine and phosphorus in greatest amount.

AN IMPROVED METHOD FOR COM- PRESSING AIR.

DR. E. L. OATMAN, of Nyack, N. Y., sends to the *N. Y. Medical Record* (December 25, 1886) an account of a simple and apparently very effective method of compressing air for use in atomizing fluids. In the cellar or basement a common galvanized iron range-boiler is placed, and connected by two pipes, entering it below, with the main water-supply and with the drain. At the upper end a tube is attached, which passes up to the physician's office. All the pipes are fitted with stop-cocks. To charge the reservoir, this air-tube and the discharge-pipe are closed, while the supply-pipe is opened. The water now rushes in, and places the contained air under a high pressure. When the water ceases to flow, the supply-pipe should be closed. The compressed air may now be used when required by opening the air-pipe, the stop-cock of which is placed in the office. When the pressure is exhausted, the reservoir may be emptied by opening both the air-tube and the discharge-

pipe, and the air may then be again compressed as before, by closing the latter pipes and opening the supply-pipe. The discharge-pipe should be of large calibre, say two inches, so that the apparatus may be quickly emptied. The arrangement would be improved, Dr. Oatman writes, by using two connecting reservoirs, allowing the water to enter only the first, which should be the larger of the two, thus compressing the air in the second, where it can be kept ready for use. The water may now be discharged from the first, for which purpose it should be provided with a second air-tube, leaving it ready for instant use when the pressure is exhausted in the second reservoir. All the cocks governing the tubes of the apparatus may be placed in the office, if desired. Ten dollars will cover the entire cost of the apparatus.

RECENT RESEARCHES IN DIURETICS.

To what extent the Malpighian corpuscles and the renal tubules respectively take part in the secretion of urine is not yet accurately known, although the researches of Heidenhain, Nussbaum, and others have added much to our knowledge. It seems likely that an investigation into the mode of action of diuretics will throw great light on the question, because a diuretic drug may act either on the Malpighian corpuscles, increasing the flow of urinary water, or on the renal tubules, increasing the amount of urinary solids, or on both structures. The great difficulty, however, in experiments on the kidney in living animals, is that of estimating how much of the effect produced by a drug is due to changes in the circulation, or in the nervous system, which has an influence on the secretory activity of the kidney, as well as on the blood-vessels. MUNK has, in his recent experiments, eliminated these factors by investigating the action of diuretic drugs on an excised kidney. The organ, after excision, was nourished, under a pressure of one hundred to one hundred and ninety millimetres of mercury, by a stream of blood and salt solution through the renal artery. The drug was added to the liquid, and its effect noted by the amount and quality of the urine, collected through a canula placed in the ureter. Before the addition of any drug, it was found that the amount of urine secreted in an hour varied from four to twenty-four cubic centimetres; that this was a true secretion, and not a simple diffusion, was shown by the fact that it contained a greater proportion of saline constituents than

the circulating fluid. The addition of chloride of sodium, nitrate of sodium or potassium, caffeine, dextrose, cane-sugar, or glycerin to the circulating fluid, increased the secretion of urine three to fifteen times, the pressure remaining the same; while in the case of nitrate of potassium and of caffeine, there was an increased rapidity of flow of the circulating fluid. Diuresis of this nature and under such conditions could only result, according to Munk, from a stimulation of the secretory cells of the kidney by the drug, a conclusion which, as regards caffeine, had already been arrived at by Von Schroeder. An interesting result obtained by Munk was the appearance of hippuric acid in the secretion from the kidney, when benzoate of sodium and glycol were added to the fluid circulating through the vessels of the kidney. As is well known, benzoic acid given to any animal appears as hippuric acid in the urine; and this result has been supposed to be due to the action of the intact blood-corpuscles. But, in Munk's experiment, these were absent; hence he concludes that the transformation is probably brought about by the oxygen which is combined with the hæmoglobin.—*British Med. Journal*, December 11, 1886.

ELIMINATION OF POISONS.

A study of the means by which nature rids the economy of what is harmful has been made by SANQUIRICO, of Siena, and his experiments and conclusions are as follows:

He finds that the vessels of the body, without undergoing extensive structural alteration, can by exosmosis rid themselves of fluid to an amount eight per cent. of the body weight of the subject of the experiment.

Through the injection of neutral fluids a great increase in the vascular tension is effected, which is relieved by elimination through the kidneys.

With reference to this fact, the author, in 1885, made experiments with alcohol and strychnine, and continued his researches in the use of chloral and aconitine with results favorable to the method employed, which is as follows:

The minimal fatal dose of a given poison was selected, and found to be in a certain relation to the body weight.

Immediately upon the injection of the poison a solution of sodium chloride, .75 per cent. in strength, was injected into the subcutaneous tissues of the neck, in quantities

being eight per cent. of the body weight of the animal.

In the case of those poisons whose effect is not instantaneous, the injection of saline solution was made on the first appearance of toxic symptoms; in other poisons the injection was made at once.

The result of the use of salines was a diuresis varying in the promptness of its appearance and in its amount.

Those animals in which diuresis was limited at first and then increased generally recovered, while those in which diuresis was not established perished; the poison used was found in the urine of those which died and also those which recovered.

The author succeeded in rescuing animals poisoned by alcohol, strychnine, chloral, and aconitine; with morphine, curare, and hypnone the method of elimination failed, although ten per cent. in quantity of the body weight of the animal was used in the saline injection. With aconitine diuresis was not always established, and when it failed the animal died in convulsions.—*Centralblatt für die Medicinischen Wissenschaften*, December 18, 1886.

ACETANILIDE—A NEW APYRETIC.

A substance known to chemists who work with dyes by the name of acetanilide, which is produced by the action of heat on acetate of aniline, and is contained in rosaniline made with acetic acid and iron, has recently been found by two German observers, Drs. CAHN and HEPP, working in Professor Kussmaul's clinic, to possess powerful febrifuge or apyretic properties. They have given it the trivial name "antifebrin." It appears to have, weight for weight, about four times the power of lowering the temperature of fever-patients that antipyrin has. The doses given varied from 0.25 gramme to 1 gramme, as much as 2 grammes ($\frac{1}{2}$ drachm) being given during the twenty-four hours. In every case in which Drs. Cahn and Hepp gave the drug, it produced more or less reduction of temperature; sometimes the thermometer registered a normal temperature for some hours together, and in these cases the appetite often returned. The action of the antifebrin was accompanied by a certain amount of perspiration and with some redness of the skin, sometimes also by thirst and an increase in the urinary secretion. Occasionally a dark tint was observed in the skin of the feet and hands, but no serious symptom was observed in any of the twenty-four cases in which it

was given. The price of the acetanilide is not high, being about a shilling an ounce. It can be administered conveniently in wine.—*British Medical Journal*, December 4, 1886.

INTESTINAL IRRIGATION IN CATARRHAL ICTERUS IN CHILDREN.

MONTI, in his clinic for children's diseases, has extensively employed the treatment of jaundice from icterus catarrhalis by cold-water enemata.

This treatment is well borne by children over three years old, and the water is used at a temperature varying from 50° to 60° F., and in quantities from one to two quarts. The presence of diarrhoea is not a contraindication. In the larger number of cases four or five irrigations were sufficient to effect a cure; in one case only were eleven needed. The dyspeptic symptoms, clay-colored stools, and engorgement of the liver were promptly relieved by two or three irrigations. Löwen-thal, of Berlin, reports good results from this method in forty-one cases.—*Medicinisches Chirurgische Rundschau*, December 15, 1886.

THALLIN IN TYPHOID FEVER.

The introduction of such drugs as kairin, antipyrin, and antifebrin has somewhat diverted attention from a very powerful antipyretic agent,—viz., thallin. PROF. EHRLICH lately presented to the Clinical Society of Berlin the results of some researches he has been making with this last-named agent, especially in the treatment of typhoid fever (*Münch. Med. Woch.*, No. 47). From experiment, he had found that after administering the drug to animals it was not retained in the nerve-centres, but mostly in the fatty tissue of the body. He also found that there was a marked difference in toxic action, according as to whether it was administered by the mouth or subcutaneously, the greater inertness of its effect in the former case being attributable to the hindrance to absorption from the presence of intestinal contents. The lesions induced by a toxic dose comprised fatty degeneration of the kidneys, necrosis of the salivary glands and pancreas, and hemorrhagic infarcts in the renal pyramids. The chief action of thallin is antipyretic, but it is capable also of moderating inflammation. As regards typhoid fever, it was administered by Ehrlich in two different ways. The first plan consisted in commencing with doses of 0.06

gramme every hour, and reducing the dose to the minimum required to give any effect. The other plan was to commence with a minimum dose, and increase it until an effect was produced, and then to continue the prescription at the dose thus attained. The action of thallin is especially noticeable in its effect on the sensorium and general condition of the patient, who presents the appearance of convalescence, whilst the splenic swelling and roseola are still present; and if the drug be discontinued the temperature will rise again. It is not therefore surprising to learn that, whereas of twenty-eight cases treated by bathing the average stay in hospital was thirty-seven days, of seven cases treated by thallin (minimum doses) the duration of treatment was forty-seven days, and cases on a scale of progressive doses thirty-eight days. However, Professor Ehrlich claims advantages for the drug in the absolute control it exerts over the pyrexia, and the sense of well-being enjoyed by the patient. There were no intestinal hemorrhages in these cases, and no instance of perforation. The kidneys were not affected, but sequelæ in the form of hyperæmia and œdematous swellings seemed due to the use of the drug. It was not thought that thallin had any specific action against the typhoid bacillus, but it did seem to limit the degree of intestinal ulceration. Professor Ehrlich considers it to be on a level with the bath treatment. Dr. Fränkel pointed out that if the statement were correct that thallin is not found in the nerve-centres its action in reducing temperature was rather inexplicable. He had exhibited it in increasing doses, but could not say that the patients experienced any special benefit attributable to the diminished fever. Dr. Guttman had not been favorably impressed by its use, and had noted the production of rigors.—*The Lancet*, December 25, 1886.

THE EFFECT AND ELIMINATION OF BORAX AND BORACIC ACID.

The extensive use of borax and its compounds as antiseptics has given especial interest to the question of the poisonous effects and mode of elimination of this drug. Johnson, of Stockholm, has made clinical studies upon this subject by introducing borax and its compounds into the stomachs of patients in the Caroline Institute, and has tested for borax by the curcuma test, which, in proportions of 1 to 2000, gave well-marked reaction, and also by the spectro-electric tube of Vigier,

which detects only the proportion of 1 to 1000. In twelve cases in which the dosage ranged from 20 grains to 50 grains daily in irregular doses, after the largest doses had been taken, three exhibited signs of intoxication, headache, vomiting, malaise; in one case, after the use of borax for ten days, a slight acceleration in the pulse-rate was observed, accompanied by increase of temperature, loss of appetite, headache, redness of the fauces, and bronchial catarrh, and finally by a well-marked papular erythema upon the thighs and joints. The urine commonly gave a reaction for borax ten minutes after the dose was taken: it was not found in two days after the drug had been used by inunction. In other cases it persisted in the urine six, eight, and fourteen days after the patient took it. Boracic acid had a distinctly diuretic effect: albumen disappeared from the morning urine in some cases where albuminuria existed; when the greatest diuresis was produced, the drug itself disappeared from the urine. Borax was found in the perspiration; in small amounts in saliva; irregularly in fæces, often after several days' ingestion, which the author thought due to its presence in the bile. Twice borax was found in ascitic fluid.

It is interesting to observe that after foot-baths containing boracic acid borax was found in the urine, and also after the application of vaseline containing boracic acid to an ulcer it was present for two days after its use. Its presence in the organism after its use with hot-water applications is probably owing in part to the influence of the steam which is present. Johnson's observations do not tend to show the danger of the use of borax and its compounds, but to call attention to the fact that after its use in the stomach, intestine, bladder, and pleural cavities ill effects have followed a five per cent. solution, and the observer advises that after the use of solutions of a strength of two per cent. or over, care be taken that no great amount of the fluid remain in the body, and that after-injections of water or neutral carbonates be made as a prophylactic measure.—*Medicinisch-Chirurgische Rundschau*, December 15, 1886.

CHLORIDE OF METHYL IN THE TREATMENT OF NEURALGIC AFFECTIONS.

From an experimental paper with the above title, published in the *Kansas City Medical Index* (December, 1886), DR. DUDLEY TAIT draws the following conclusions:

1. Chloride of methyl spray may be used

with great advantage in all neuralgic affections; its sole indication is pain.

2. It can be successfully resorted to in view of eradicating pain in the course of various pulmonary affections, in acute and chronic rheumatism, and also in affections similar to writer's cramp, etc.

3. In trifacial neuralgia, precaution is of absolute necessity, but does not constitute a counter-indication.

4. One application often suffices; however, two and exceptionally several applications are necessary.

5. The majority of neuralgic affections are definitely cured by this treatment; success has sometimes been obtained in neuralgias symptomatic of Pott's disease, pelvic tumors, etc.

6. The slight and *transient* pigmentation that sometimes follows this treatment is of no importance; it disappears in the space of two weeks.

7. Experiments seem to indicate that the analgesic properties of chloride of methyl are due to its action on the superficial terminal expansions of the nerves of the skin.

TREATMENT OF SYPHILIS BY SUBCUTANEOUS INJECTIONS OF CALOMEL.

BALZER has treated syphilis by the above method, employing the following combination:

Calomel, gr. viii;
Oil of vaseline, ʒiiss .

The first case in which this treatment was employed was that of a patient who had roséola and mucous patches upon the vulvæ, which had resisted all other modes of treatment. The first injection made contained $\frac{1}{2}$ of a grain of calomel, the second injection contained 1 grain.

A vigorous inflammation occurred at the place of injection, but without suppuration. Eight days after hypodermic medication began, the unpleasant symptoms which had so long annoyed the patient disappeared.

The author has treated five other patients similarly, and with excellent results.

Two hours after injection traces of calomel are found in the urine.

Scarenzio and Smirnoff have treated secondary syphilis with 8 grains of calomel in four doses, and at intervals of twenty days. They claim good results, without returns of the disease.

The use of the oil of vaseline as a vehicle greatly diminishes the tendency to form abscesses after hypodermic injection.—*La Presse Médicale*, December 5, 1886.

THE INFLUENCE OF COCAINE ON THE ACTION OF ESERINE ON THE EYE.

It was remarked by Wecker in the *Annales d'Oculistique* (1884, t. xcii. p. 218) that the action of eserine on a cocainized eye is greater than when no cocaine had been used. This difference he attempted to explain by suggesting that the slight cocaine-anæsthesia of the iris and ciliary body may cause a somewhat similar effect on the pupil to that of eserine. DR. E. L. TUREVICH, however, who has recently published a "preliminary communication" on this subject in the *Vratch*, points out that the action of cocaine by itself on the pupil and accommodation is exactly the reverse of that due to eserine, cocaine dilating the pupil and paralyzing the accommodation, while eserine contracts the pupil and causes spasm of the accommodation; besides, it has been conclusively shown that a combination of atropine and cocaine produces a more powerful dilating effect on the pupil than atropine alone; and Ad. Weber has even given the equivalents of eserine and pilocarpine as antagonists of cocaine, these being 1 to 25-30 in the case of eserine, and 1 to 4 in the case of pilocarpine. The fact of eserine acting more powerfully on a cocainized eye is therefore paradoxical, and by no means easy to explain. How, writes Dr. Turevich, can the anæsthesia of the ciliary body, even if cocaine does produce such an effect, which is extremely doubtful, favor the action of eserine, as Wecker suggested? We should *a priori* expect that the contraction of the pupil by eserine in a cocainized eye would be, if anything, less than in an ordinary eye; and indeed it was shown by Weber that when a drop of a two per cent. solution of eserine was combined with 25 to 30 drops of a similar solution of cocaine, its effect on the pupil was entirely masked. In the hope of clearing up the paradox, Dr. Turevich undertook a series of observations on the paralyzing effects of eserine and pilocarpine on his own eyes and on those of others, both with and without the previous instillation of cocaine. The course of the accommodation-spasm was observed by measuring the refractive power of the eye every five minutes from the application of the eserine or pilo-

carpine to the time when the effects had passed off. Fifteen comparative observations were made, which completely confirmed Wecker's statement as to the greater effect of eserine on a cocainized eye, showing also that the same is true of pilocarpine. The explanation suggested of the apparently opposite action of cocaine when applied previously to the eserine and when combined with it is that when anæsthesia of the conjunctival sac is present,—first, the surface absorbs more of the eserine than when the eye is as sensitive as usual, the introduction of a foreign liquid causing less winking with less consequent expression of the liquid between the lids; secondly, the secretion of mucus is smaller, and thus the solution is less diluted and less likely to be washed away; and thirdly, the conjunctiva and cornea are drier, and thus absorb the eserine more readily. The author convinced himself by special experiments of the difference in the behavior of cocaine according as it was applied before or simultaneously with the eserine or pilocarpine, and the above explanation is the only one which appears to him adequate to explain the apparent paradox.—*The Lancet*, January 8, 1887.

URETHAN IN THE TREATMENT OF MENTAL DISEASES.

OTTO and KÖNIG have given this drug in various cases of mental disease, with the following results:

In a case of great excitability in a woman who had been paralyzed, urethan was given in doses from 1 drachm to 2 drachms without any apparent effect. Larger doses produced very unpleasant after-effects in gastric symptoms. In excitability of idiotic children it was given with good effect; in children from 4 to 10 years old the doses ranged from 8 to 16 grains in the younger, from 20 to 40 grains in the older.

In the treatment of men who had been paralyzed its use was quite without effect.

König concludes that paraldehyde in such cases is much better; in large doses it also produces gastric disturbance, and when used for a long time cerebral impairment.

Rottentiller, in Budapest, has had much better results from the subcutaneous use of urethan with from one to three injections of one-fourth syringeful of a thirty per cent. solution. A restful sleep of six or eight hours followed, and the injection was unattended by unpleasant after-effects locally.

The experiences of the writers did not lead them to expect any well-defined and practical effect from the use of urethan.—*Zeitschrift Apotheker-Vereins*, No. 33.

THE TREATMENT OF CERTAIN FORMS OF VOMITING.

There are few disorders which cause more discomfort and distress than those accompanied with incessant attacks of vomiting; there are few disorders which try more the patience and the skill of the practitioner. DR. F. P. ATKINSON gives us in the *Practitioner* (for November, 1886) a number of points which may prove useful in relieving certain forms of obstinate vomiting.

In cases of *simple bilious vomiting* he states that a mixture containing 15 minims of solution of potassium and 4 of laudanum administered every four hours acts like a charm, and he asserts that in no uncomplicated cases will there be any vomiting after two or three doses. For the *vomiting of pregnancy* he suggests a little milk and tea, with a small piece of bread and butter or biscuit, immediately before rising in the morning, and a biscuit or two at various intervals throughout the day, whenever there is a feeling of emptiness. In vomiting from *ulceration of the stomach* the great object is to give the stomach as much rest as possible. This may be accomplished by giving very small quantities of peptonized milk or koumiss at short intervals; thus a teaspoonful of the above may be mixed with cold water, and given every four hours. Dr. Atkinson further recommends that the body should be oiled night and morning to help nutrition, and covered with warm clothing to prevent cold. Later on, when the pain has almost subsided, various simple foods may be allowed. When the vomiting is very urgent, of course the stomach should be given entire rest, and peptonized meat enemata should be administered.

In the vomiting which occurs in *infants brought up by hand*, the most frequent cause is found in the inability to digest the casein of the milk. In such cases it is advisable to use one of the many peptonizing powders now on the market, or the following may be given: Two tablespoonfuls of whey, two tablespoonfuls of water, and one tablespoonful of cream; if there be some diarrhoea, a little meat juice may be given three or four times daily, while the body should be oiled night and morning.

THE ALCOHCLIZATION OF WINES.

In the session of the Academy of Medicine of France held November 30, 1886, the Academy discussed at length the question of the reinforcing of wines with alcohol, and, after a long controversy, arrived at the following conclusions :

1. The addition of pure alcohol to wines in quantities not exceeding two degrees may be allowed ; but amounts greater than this cannot be tolerated.

2. Addition of alcohol is dangerous, not only because of the quantity and quality of poor alcohol used, but because it destroys confidence and perpetuates fraud.

3. Alcohols commonly called good increase considerably the injurious effects of brandy and liqueurs ; alcohol added to these liquids should be absolutely pure.

4. The Academy called the attention of the authorities to the necessity of reducing the number of smaller warehouses for keeping and altering wines, and of putting in active operation laws against drunkenness.—*Bulletin de l'Académie de Médecine*, No. 48.

A NEW METHOD OF EXCISION OF THE KNEE.

At a recent meeting of the Medical Society of London, Mr. HERBERT ALLINGHAM (*Lancet*, December 18, 1886) read a paper, and showed cases illustrating a new method of excision of the knee. The operation consists in making a vertical incision over the joint in front, beginning two or three inches above the patella, and prolonged over the patella down to the tubercle of the tibia. The knife splits right through the quadriceps tendon above the patella into the synovial pouch there. The soft tissues over the patella are divided to the bone, the knee-cap sawn through, dividing it into two lateral halves, then the ligamentum patellæ is also split down to the tubercle of the tibia. By this means the joint may be thoroughly exposed by drawing outwards each half of the patellæ and associated structures to its corresponding side of the joint. The two halves of the patella are wired when the operation is finished. He claimed the following advantages for the operation: 1. The attachments of the fascia lata, the lateral ligaments, and the prolongation of the vasti to the tibia and fibula are not divided, and consequently there is much more support to the joint during the healing process, and when the leg is well. 2. Above

the patella the synovial pouches are well opened, and all the synovial membrane can be thoroughly removed. 3. Dislocation of the tibia backwards and tilting of the femur forwards, which commonly occur after the operation, are thus prevented. 4. The joint and the end of the bones can be thoroughly examined, which was not possible by the method of lateral incisions. 5. The undivided quadriceps is a strong antagonist to the hamstring muscles, and should the splint be left off the leg is much less likely to become bent. 6. Progression is greatly improved, the attachment of the quadriceps being neither divided nor the muscles shortened, as must necessarily take place when either the transverse H- or U-shaped operation is performed. 7. And, above all, as we hope after excision to obtain movements in the knee-joint, the chances, Mr. Allingham thought, of such a result being brought about will be greatly facilitated by the operation described. In future operations Mr. Allingham said he would remove thoroughly the whole synovial membrane, and only dig out with a gouge the diseased spots on the cartilage, and should not in any way interfere with any of the cartilage that looks healthy. If the crucial ligaments are not extremely diseased they should be left undivided. The joint should be kept at absolute rest until the wound has healed, when passive motion may be commenced.

TREATMENT OF BRIGHT'S DISEASE.

SEMMOLA, of Naples, in an article in the *Wiener Medizinische Blätter*, No. 49, advises strongly against allowing a patient who is suffering from nephritis to come in contact with cold in any avoidable way. Such patients are excessively sensitive to cold, and cold baths are followed by great shock and depression. Violent massage and exercise of the muscles the author also strongly deprecates as followed by great shock and weakness.

He would advise the patient to live in a dry and equable climate ; to strictly avoid all exposure or going about in severe winter weather ; to practise mild gymnastics in a comfortable room rather than venture into a temperature below 18° or 20° C. The author emphasizes the remarkable sensibility of the skin of the sufferer with Bright's disease to all variations of temperature. Sodium iodide and chloride is advised in doses as large as tolerated. When, after two or three weeks, albumen has not entirely disappeared and dropsy

has been relieved, phosphates of sodium or calcium are given in quantities as large as 40 grains or a drachm daily. The efficacy of these drugs the author believes consists in their power to promote the assimilation of albumen.

The methodical inhalation of oxygen, which Semmola has urged since 1867, has been repeatedly proved to be of the highest benefit. Albumen soon disappears after its use, and although casts may remain in the urine, the patient's general condition is so much improved that the author thinks we have here an argument for the dyscrasic or hæmatogenic origin of Bright's disease.

All astringents are considered not only valueless but also injurious. Especially is the action of ferrum sesquichloratum and plumbum aceticum thought injurious because of their astringent influence on the capillaries of the skin.

HYOSCINE AS A CEREBRAL SEDATIVE.

DR. J. MITCHELL BRUCE, writing in the *Practitioner* (November, 1886), is able to confirm the statements already made as to the value of hyoscine as a cerebral sedative. His experience shows that there can be no doubt about the rapid and thoroughly complete effect which it possesses in quieting delirium. With the exception of this drug, our present sedatives are not sufficient to meet every case. The bromides, chloral, and morphine, which constitute the entire group of sedative drugs to which we have recourse with any feeling of confidence, will often fail us one after the other in urgent cases. The bromides have not the power, while chloral and morphine are dangerous in many cases, and dare not be given. In such cases Dr. Bruce believes that hyoscine will be thoroughly reliable, and that in cases of troublesome, noisy delirium there is no treatment at once so prompt, successful, and safe as a hypodermic injection of hyoscine. As might be expected, its use is not entirely unattended by some disadvantages. Thus, within half an hour after the administration of from $\frac{1}{100}$ to $\frac{1}{75}$ of a grain it may cause failure of respiration in the form of rapid, shallow breathing, or often Cheyne-Stokes rhythm. It has also been observed that cough has been noticed on the nights that hyoscine has been given in delirious cases. The pulse may become weak, the face livid, and the pupils dilated, the whole appearance of the patient being calculated to cause anxiety. There is not, how-

ever, a case on record in which death has been attributed to an overdose of this drug, and it is rarely necessary to give large doses, Dr. Bruce having found that the $\frac{1}{100}$ of a grain will often produce full effects. Again, hyoscine does not produce any dryness of the skin and throat, but occasioned, in Dr. Bruce's experience, distinct increase of perspiration, indicating some radical difference between the action of this alkaloid and other members of the atropaceous group.

COCAINE AS AN ANÆSTHETIC IN LABOR.

FISCHEL, of Prague, has used cocaine in six cases of labor, with two negative, one fully successful, and three partly successful results. He regards it as an adjuvant to chloroform. Cocaine is useful only in annulling pain caused by the tension upon the maternal tissues. Fischel proposes to apply a four or five per cent. solution through a speculum to the tense and dry tissues. When abundant liquor amnii has escaped, the powdered drug, mixed with an accompanying neutral powder, is advised.—*Wiener Med. Wochenschrift*, December 11, 1886.

NASAL TREATMENT OF WHOOPING-COUGH.

A definite idea has of late gained ground as to the nature and origin of whooping-cough. The idea may or may not be pathologically correct; but the treatment founded on it is decidedly of a rational description. What is more to the practitioner, this treatment is said to prove remarkably successful. Correctly speaking, the idea is compounded of at least two factors. One of these is fully as familiar as whooping-cough is common. Micro-organisms are the cause of the affection. The microbe effects an entrance into the economy from a special site, and that site of entrance is the soft tissues of the nasal fossæ. The rational therapeutics is founded on formulæ of an equally explicit character. Antiseptics or germicides will destroy the living germs. They should be used early, and their sites of action are the nasal fossæ. The number of remedies already recommended is sufficiently striking. The method at present in greatest favor appears to be insufflation. Convenient contrivances of different designs for effecting the insufflation may be met with in great variety at the surgical instrument makers. A clumsy but successful

insufflator may be contrived by rolling a spill of paper, inserting a little of the powder to be employed at the end that enters the nostril, and supplying the motive force by the parent's or operator's puff of breath. But the puff-balls or regular insufflators are effective and not costly. Iodoform, salicylic acid, and boracic acid are the three antiseptics that appear to be most in vogue. They should all be very fine, almost impalpable powders. Nasal douches are very effective if they can be managed, as in older and not too nervous children. The most effectual douche of antiseptic kind appears to be the 1 in 500 corrosive sublimate. Care is to be taken that no appreciable quantity of this solution is swallowed. Some practitioners employ simple nasal douches in the earliest stages,—say, a drachm of Condyl's fluid or of common salt to the pint of water. And this is done as much to mechanically wash away secretions with contained contagia as to destroy the germs. Weak solutions of tincture of iodine and of alum are also used. These lotions may be syringed into the nasal passages, or the children may be induced to snuff the lotion up from the palm of the hand. Older children may be taught to take the powders as "snuff." Repeated applications of any of these methods are necessary to insure thorough topical treatment in the early stages of the catarrh. The antiseptic agents may also be applied, as in young infants, by means of camel-hair brushes charged with ointments, lotions, or glyceroles. It is necessary to clear away all secretions and scabs first, by syringing or anointing with oil. The agent is then directly applied to the bare congested surface of the mucous membrane. An ointment of half a drachm each of iodoform and eucalyptol to an ounce of vaseline is highly commended by some. The boroglyceride may be used in similar fashion, also lotions of corrosive sublimate. Any of the antiseptic solutions may be atomized by the steam- or hand-spray, and inhalations effected through the nostrils. It is doubtful whether the theory of this fashionable method is correct; but supposing it should be, it is equally dubious whether the good that results may not be from the mere treatment of the catarrh as such, apart from its supposed cause. A pledget of cotton-wool, or a chamomile flower placed in the nostril to prevent the access of air, alleviates the symptoms of an ordinary rhinitis. So it may be with the various applications, the principal of which we have mentioned. Cocaine is now widely used as a

four or five per cent. solution painted on to the nasal and pharyngeal mucous membranes, not only in whooping-cough, but in simple or severe catarrhs.—*Lancet*, January 15, 1887.

INVESTIGATION CONCERNING PERISTALSIS IN THE INTESTINE AND THE ACTION OF CATHARTICS.

Hess, of Munich, discusses at some length the theories which have been advanced to explain intestinal peristalsis and the action of laxatives, and describes his own experiments upon these points.

The original explanation of Liebig, that endosmosis and exosmosis governed the action of laxatives, and the theory of Aubert, that peristalsis depended upon an increased nervous reflex, have been defended and modified by other writers, some of whom have laid great stress upon the influence of increased secretions, and the hinderance to the absorption of these secretions which exists in venous stasis and accelerated peristalsis (Thiry). According to Vulpian, Lauder Brunton, Brieger, and Hay, laxatives cause increased peristalsis, as do also small doses of drastic purgatives; in large doses drastics cause an inflammatory exudate and hypersecretion; the neutral salts cause an outpouring of water into the intestine which is not a simple transudation, but a hypersecretion as well.

The author does not consider the present series of experiments as concluded, but as introductory to a more extended series. His method was as follows:

In a dog of medium size a gastric fistula was made, whose opening was near the pylorus. The finger introduced into the fistula was grasped by the muscle of the pylorus, and the beginning of the duodenum was accessible through the fistula. In the first portion of the intestine was placed a small rubber balloon, which terminated in a projection or handle to which a rubber tube could be attached; the capacity of this balloon, when moderately distended, was twenty to thirty cubic centimetres of fluid. To its tip or handle was attached a long rubber tubing, graduated in centimetre lengths and wound with thread to prevent its distention. After its introduction the balloon received from a graduated syringe a registered amount of water. The balloon sank into the pyloric opening, and began to pass through the intestine, advanced by the peristaltic action of the bowel. Its rate of advance could be easily measured by the graduated tube; it

could be emptied by this tube, or further distended without removing it from its place in the intestine.

It is evident that but sufficient tubing was needed to traverse the entire intestine; the animal showed no signs of discomfort. By checking the progress of the balloon, it could be used as a tampon for dividing the intestines; by allowing it to be expelled, fluid could be injected into the lower bowel through the tubing.

To ascertain the mode of the normal peristalsis two series of observations were undertaken, in the first of which the balloon contained forty-five cubic centimetres of water, in the second twenty-two cubic centimetres.

The balloon in the first instance was filled *in situ*, and a laxative mixed with ferrocyanide of potassium administered.

An examination of the fæces showed the coloring-matter, and proved that the distention of the balloon was not so great as to entirely occlude the intestine. In twenty-nine hours and fifty minutes the balloon had proceeded a distance of one hundred and forty-nine cubic centimetres, where it stopped, and, after remaining immovable for several hours, was finally emptied, and expelled by a soap-and-water clyster. There was every reason to suppose that its lodgment was at the ileo-cæcal valve, which could not be passed by a ball of its dimensions.

The next experiment was with the balloon containing twenty-two cubic centimetres of water, and resulted in the passage of the balloon nearly to the anus, a distance of two hundred and twenty centimetres in the animal used, in twenty-three hours and twenty-five minutes. It was, as before, expelled by an enema.

The experiments of Crampe have established the ratio between the body length and length of the intestines at eight and one-half times. By this proportion the length of the intestines in the animal the subject of this experiment was six hundred and eighty centimetres. A post-mortem measurement gave five hundred and thirty centimetres as the length. The balloon passed less than two hundred and fifty centimetres in traversing the intestines, and the difference is accounted for by the contracted condition which peristalsis induces. This condition of contraction was followed by relaxation behind the balloon, which rested in a sac of intestine for varying intervals. This was demonstrated by the difference in the distance traversed at ten-minute intervals during the progress of

the experiment. Subtracting the one hundred and forty-nine centimetres from the two hundred and twenty centimetres passed by the balloon the second time, we have seventy-one centimetres as the length of the large intestine, the distance from the anus to the ileo-cæcal valve. Post-mortem measurement gave this distance seventy-three centimetres.

It was observed that peristalsis began a short distance below the pylorus, and was, as has been said, intermittent in pauses of even an hour's duration. It was also much more vigorous near the pylorus, and became less active as the distance from the stomach increased, as Nothnagel had shown previously. It was noticeable that the bolus which moderately filled the intestine passed more rapidly than the larger one which distended it.

Expiration favored peristalsis. In the large intestine the balloon moved much more slowly than in the small bowel.

The relative vigor of peristalsis during day and night was 3 to 1.

Long pauses in the movement of the balloon were observed with some animals, which could not be explained.

As the balloon progressed more deeply into the bowel a secretion was established in the stomach, which was thought to be the result of reflex action.

The force exerted in normal peristalsis was measured by passing the rubber tubing over a pulley, and attaching to its extremity a bag in which shot was placed. The following were the results:

Just within the pylorus the force exerted by the intestine sustained two hundred and twenty-eight and one-half grammes, or about seven ounces. As the distance from the stomach increased, the weight sustained and raised diminished to 90.4 grammes and 75.5 grammes. While the author does not consider this portion of his experiment as at all conclusive, yet it illustrates forcibly the peristaltic power of the intestines.

In ascertaining the mode of action of laxatives the rubber tampon (the balloon) was allowed to go some distance in the intestine, and then kept stationary. A cathartic was given, and the phenomena attending its action in the presence of the tampon were observed, and, with the exception of ox-gall, none caused diarrhœa, while their entrance to the small intestine only was allowed.

When the balloon was collapsed, diarrhœa generally began promptly as soon as the drug had gone farther into the large intestine. As before, it was endeavored to *fill* the intestine

without distending it, and potassium ferrocyanide was used as previously. In addition to those cases in which no diarrhoea was caused by the descent of the laxative material, there was a proportion of cases in which the cathartic seemed reabsorbed by the intestine before it reached the large intestine.

The list of laxatives used in experimenting included sodium sulphate, castor oil, calomel, senna, croton oil, colocynth, gamboge, and oxgall. Each drug was given first, without its confinement in a particular part of the intestine, and its effect, when given in this manner, was contrasted with that produced when, by the agency of the balloon, its effect was limited to a particular portion of the bowel. At the conclusion of his experiments the author repeats as follows what we have stated: "All laxatives with which experiments were made, especially in active doses, occasioned no diarrhoea when prevented by the balloon used from going into the large intestine."

These laxatives effected the results which followed their ingestion by a direct action on the mucous membrane of the intestine. Those drugs which cause laxative effects when injected into the blood are absorbed too slowly and in too small quantities when introduced into the intestine to produce their previous effects.

Supposing catharsis to result from accelerated peristalsis, these experiments would tend to show that the action did not result from the contraction of long portions of the muscular coat, nor from a rapid action communicated from one muscle to another, but through the irritation of successive portions of the mucous membrane of the intestine. It is also a reasonable supposition that the peristaltic distention, which was always present just above the balloon, was disseminated through the whole of the small intestine, and excited afterwards by the cathartic in the large intestine.

The author took especial pains to avoid the paresis of the intestinal muscle, which overdistention of the balloon used might have caused through its pressure, and the balloon was allowed to play only the part of a moderate accumulation of fæces.—*Deutsches Archiv für Klinische Medecin*, Band 40, 1 Heft.

A NEW TREATMENT OF GONORRHOEA.

CASTALLAN, of St. Mandrier Hospital, starting with the view, now popularly entertained, that gonorrhoeal urethritis is a parasitic disease, and being led by observation to believe

that the microbe can only live in an acid medium; finding, moreover, that in this disease the discharge is, as a rule, acid, proposes to treat gonorrhoea in the acute stages by urethral injections of sodic bicarbonate, three or four injections being made daily of a one per cent. solution. For this treatment, which is but a logical inference from the premises, he claims remarkable success, although the cases on which it has been tried in St. Mandrier, as yet, number only a dozen. The injections of bicarbonate of sodium are commenced as soon as the discharge appears, or the patient comes under observation; the urethral secretion is tested every day with litmus-paper, and the injection is kept up till the discharge becomes alkaline or neutral. For internal treatment the patient is given flaxseed tea, with occasional doses of bromide, if there seems to be any indication for the sedative effects of this salt. His conclusions are as follows:

1. The urethral pus in the first stages of the disease is generally, if not invariably, acid; this acidity is quite pronounced.

2. The treatment by bicarbonate of sodium rapidly lessens the discharge; it also rapidly diminishes or removes the pain in micturition.

3. In old urethrites, and in those which have been treated by the usual injections, it speedily brings about a cure.—*Boston Medical and Surgical Journal*, January 13, 1887.

THE SUBCUTANEOUS AND INTRAMUSCULAR INJECTIONS OF PREPARATIONS OF IODINE IN SYPHILIS.

The rather unsatisfactory state of the therapeutics of syphilis at the present day justifies a careful attention to suggestions of improvement as found from time to time in the medical press. In addition to the exhibition of iodiform in syphilitic lesions, as discussed in a previous issue of the THERAPEUTIC GAZETTE, we now beg to review a recent paper of DR. CARL SCHADECK, of Kiew, which appeared in the *St. Petersburg Medical. Wochenschrift*, No. 29, 1886, and advocates the employment of preparations of iodine.

Schadeck instituted a series of clinical experiments with the iodides of sodium and potassium on soldiers of the Kiew military hospital affected with syphilis. There were eight cases in all, and the number of subcutaneous and deep intramuscular injections made was ninety. The largest number of injections made in one individual was sixteen (in two cases); in the other cases the number of injections was twelve (two cases), ten, nine,

eight, and seven. In seventy-nine instances the injections used were a solution of iodide of potassium; in the remaining eleven iodide of sodium was used. The employed solutions were carefully neutralized, filtered, and prepared according to the following formula:

R Potassii (sodii) iodat., gr. xlv;
Aquæ dest., fʒiiss.

This solution was daily prepared fresh, and injected by means of a Pravaz syringe, each patient receiving daily about $3\frac{1}{2}$ grains of the iodine salt. Of the ninety injections twenty-six were carried deeply under the aponeurosis of the gluteal muscles (Arcari's method), and the remaining sixty-four in the ordinary manner. The deep intramuscular injections were made without raising a fold of the integument, piercing with the needle the skin, the cellular tissue, and the fascia perpendicularly. In this manner the entire quantity of the solution was carried directly into the parenchyma of the muscle.

The principal results obtained by Schadeck's experiments, as far as they interest the general practitioner, can be conveniently epitomized as follows:

1. The pain resulting from the injection itself, or the puncture of the needle, was either quite immaterial or wholly absent.*

2. The injected solution generated invariably a painful irritation, which differed in intensity, duration, and character in the various instances.

3. In no instance appeared an abscess or inflammatory infiltration on the point of injection.

4. In two patients appeared after nine or ten injections an iodine exanthema on face, trunk, and extremities in form of small acne-pustules. This eruption disappeared almost immediately after withdrawing the applications.

5. As to the therapeutic effects obtained no palpable results could be anticipated, as the number of injections did in no case suffice to develop the full iodine action against the syphilitic lesions. It has repeatedly and conclusively been shown that iodine introduced into the system hypodermically is taken up by the bodily juices, and exerts thus its specific action. In two instances the experimenter succeeded in eliminating all syphilitic lesions by the ex-

clusive hypodermic application of the two salts of iodine.

6. Although these experiments are in themselves too scanty, and possibly too superficial to justify any definite conclusion as to the therapeutic value of the foregoing hypodermic uses of the salts of iodine, they nevertheless go far in showing that the mercurial treatment is no *conditio sine qua non* in the treatment of syphilis, and encourage further trials in the indicated direction.

A NOVEL TREATMENT OF PHTHISIS.

DR. BERGEON, of Lyons, recommends a method of treating phthisis which has, at any rate, the merit of novelty. His plan is to utilize the effects of sulphuretted hydrogen, and this he proposes to do by injecting carbonic acid gas, saturated with sulphuretted hydrogen, into the intestines. If care be taken to secure the absence of atmospheric air, no inconvenience, it is said, results from the injection even of large quantities of the mixture; absorption into the venous system and elimination by the lungs taking place very rapidly. It is claimed for this procedure that, by its means, the use of sulphuretted hydrogen is unattended with any toxic effects, and exerts its influence directly on the lungs themselves. It has been employed in a number of cases at the hospitals of Lyons, Bordeaux, and Paris, with great benefit to the patients, even in very advanced cases, and, latterly, similar observations have been made in the consumption hospitals of London, the results of which have not yet been made known. The method has been very much simplified by the introduction of an ingenious but simple apparatus whereby the carbonic acid gas is generated, and saturated with sulphuretted hydrogen, ready for use.—*British Medical Journal*, November 27, 1886.

THE DRUGS WHICH INCREASE AND DECREASE THE SECRETION OF MILK.

GIURLEO calls attention to the peculiar properties of *Ditana digitifolia*, which, he claims, possesses the power to stimulate the secretion of the mammary glands, confirming the statements published in a previous issue of the GAZETTE. The author found an opportunity to try the remedy in a number of wet-nurses, and pronounces himself as extraordinarily satisfied with the results obtained. In some instances, in which the secretion was

* In Germany the hypodermic syringes in use have all extraordinary long needles (compared with the American instrument), and are also carried into the muscular parenchyma in order to obviate pain and eventual abscesses of the cellular tissue.

almost wholly absent, the ingestion of an infusion of the plant produced a copious supply of milk.

In Italy an ethereal tincture of *Ditana digitifolia*, combined with syrup, has been known for a long while under the name of "galatiosore."

The blossoms and buds of the plant, besides, possess diaphoretic properties.

The same author asserts that *Rhamus alaternus* and *Ligustrum vulgare* have properties precisely opposite to those of *Ditana digitifolia*,—i.e., they decrease the secretion of milk. The author uses an infusion of these plants (45 grains of the leaves to 6 ounces of water), and orders for several days this quantity of the infusion to be used up twice a day. —*Journal de Médecine de Paris*, July 11, 1886.

PEREIRINE AS A TONIC.

The bark of the pao-pereiro tree is said to be a tonic and febrifuge. It contains an alkaloid which was first isolated by Ezequiel in 1838. The name of Pereirine has been given to it. The product of that name used in Brazil is an amorphous yellow powder, which is not a pure alkaloid, but contains a compound of amyl, a bitter coloring substance insoluble in water, analogous to glucose, a hydrocarbon, and another crystallized substance, probably a glycoside. Pereirine is very slightly soluble in water, to which it communicates a bitter flavor, but dissolves easily in ether. M. GUIMARAES has proved that pereirine produces the following effects: 1. A period of agitation characterized by slight convulsive trembling of the skin, irregular respiratory movements, decrease of the central and peripheral temperature and of the pulse-beat. 2. A period of functional paralysis, consisting in aphonia, diminution in the number of respirations, elevation of temperature, paralysis of voluntary movements. 3. A period of complete paralysis ending in death. Pereirine, as sold commonly, is impure. M. Ferreira has administered doses of two grammes a day in cases of persistent paludal infection.—*British Medical Journal*, January 1, 1887.

ANTIFEBRIN AS ANTIPYRETIC AND ANTISEPTIC.

The researches of DR. G. KRIEGER with antifebrin, as published in the *Centralblatt für Klinische Medizin* (October 30, 1886), seem not only to corroborate the claims of Heppe

and Cahn as to the antipyretic virtues of the drug, but have also yielded the fact that the new remedy possesses energetic antiseptic properties.

Antifebrin was found to be soluble at a temperature of 60° F. in one hundred and sixty parts of water, and at a temperature of 212° F. in twenty-five parts of water. In acids it is scantily soluble in presence of cold, but readily so if heated. On cooling, the saturated solution assumes a gelatinous consistency through precipitation of the crystals. More easily than in water antifebrin is soluble in ether, alcohol, and alcoholic liquids, without impairing their taste.

Krieger made his observations in the eighteen following cases: Typhoid fever, four cases; intermittent fever, three; croupous pneumonia, three; acute articular rheumatism, three; pleurisy, two; diphtheria, one; puerperal fever, one. Besides, the drug was exhibited in several cases of facial neuralgia, where it caused the immediate disappearance of otherwise regularly-appearing paroxysms.

In order to determine the comparative value of antipyrin and antifebrin, a series of observations was made in various cases of typhoid fever, and showed—differing somewhat from the results obtained by Cahn and Heppe—that 7 grains of antifebrin corresponded in duration and magnitude of effect to 15 grains of antipyrin, though the former requires a longer time for the manifestation of intense action.

Krieger adds to his paper a number of clinical charts illustrative of the absolute and comparative physiological properties of antifebrin. These charts show that a slight action set in very soon after ingestion of the drug. An intense action, however, cannot be observed before the third hour, and between the sixth and the tenth hour all action has disappeared. Simultaneously with the temperature the frequency of the pulse is lowered, while its magnitude and tension increase. The author states that no secondary symptoms were ever recorded in the course of the antifebrin treatment, excepting a regularly discernible cyanosis of the cheeks and the visible mucous membranes. Vomiting, or even an inclination to vomit, such as frequently attends the ingestion of antipyrin, was likewise not observed. Sweating has been seen in a few instances, and a great appetite in numerous cases as results of this treatment.

The action of antifebrin, though it was in no instance negative, manifests itself quite

differently in different affections. Typhoid and intermittent fever receive the greatest reduction of heat. In pneumonia, pleurisy, and especially in puerperal fever, the antipyretic properties of antifebrin are less conspicuous. The entire absence of rigors in the reascend of temperature is an especial feature of the antifebrin action.

It is difficult to as yet define the exact indications for antifebrin, and to explain the *modus operandi* of its physiological action. Against any action from the part of the gastric juice speaks the wholly negative result obtained in a case of so-called artificial digestion (by means of pepsin and muriatic acid at 92° F.). The cyanosis, however, above referred to justifies the assumption that at least a part of the antifebrin is changed back into aniline.

As to the dose, Krieger advises to begin with 10 to 15 grains, and to gradually increase it; 50 grains were in many instances given *pro die* with perfect impunity.

A number of surgical cases coming under the observation of Krieger convinced the author that antifebrin possesses also distinct antiseptic virtues. In these cases the drug was used either as a powder or dissolved in ether or collodion. The closed wounds thus treated healed invariably *per primam intentionem*; the open ones showed little or no irritation and suppuration.

The action of the drug upon micro-organisms will form the subject of a later publication of Krieger. A more extensive application of antifebrin for internal and surgical purposes is facilitated by the extraordinary cheapness of the drug.

THE CURABILITY OF ALCOHOLIC CIRRHOSIS.

According to a Paris correspondent, a short time since M. TROISIER communicated a case to the Société Médicale des Hôpitaux in which the ascites resulting from cirrhosis of the liver had disappeared under the influence of iodide of potassium and strychnine, and the visceral lesion itself had seemed to be cured. In the discussion which ensued it was pointed out that ascites sometimes passes away spontaneously in the course of a cirrhosis, and, on the other hand, the affection of the liver may go through all its phases without giving rise to peritoneal effusion. M. Troisier now goes further. He asks whether there does not exist a particular form of alcoholic cirrhosis in which the lesion,

stopping short of destruction of the liver-cells, is susceptible of retrogression; and he relates another case in support of this hypothesis. A confirmed drinker, aged 68, was under the care of a colleague, and presented all the symptoms of hepatic cirrhosis. Between the months of December and September one hundred and sixty-five litres of fluid were removed by tapping at different times. At the present time the peritoneal cavity is empty, the liver slightly enlarged, and the patient in excellent health. M. Bucquoy said that he had seen several similar cases, and he entertained no doubt that other members of the Society had had a like experience.—*The Lancet*, December 25, 1886.

INDIAN HEMP AND BELLADONNA IN WHOOPING-COUGH.

VETLESEN recommends in the *Norsk Mag. f. Lægevidenskaben*, 1886, No. 9, the following prescription as a cure for pertussis:

R Extr. cannab. indic., gr. xv;
Extr. belladonnæ, gr. vii;
Alcoh. absol.,
Glycerini, aa fʒiiss.

To be given to children of 8 months to 1 year in 4- to 5-drop doses; 1 to 2 years in 5- to 8-drop doses; 2 to 4 years in 8- to 12-drop doses; 4 to 8 years in 10- to 13-drop doses; 8 to 12 years in 12- to 15-drop doses; over 12 years and to adults in 15- to 20-drop doses.

The medicine is to be taken either only in the evening, or evening and morning. In children younger than 8 months Vetlesen has not yet tried the remedy. The number of cases thus treated is one hundred and sixteen; in eighty-three (71.6 per cent.) the result was favorable, and in thirty (25.9 per cent.) the result was excellent. Injurious effects have never been observed. Controlling experiments have shown that neither of the two drugs, when given alone, could bring about the favorable results attending their combination.

CARBOLIC ACID IN WHOOPING-COUGH.

DR. F. P. ANDERSON, of Grosse Isle, writes to us that he has treated a number of cases of pertussis during the past three months with small doses of carbolic acid, and in one case only did he resort to other remedies.

In several cases in the same household the paroxysms of coughing and vomiting were arrested so promptly as to cast doubt on the

correctness of his diagnosis, a doubt dispelled by temporarily withholding treatment in one subject.

The triturated tablets containing one-tenth grain of carbolic acid were administered generally, and introduced without objection into the child's mouth. To an infant of 3 months of age a half tablet (gr. $\frac{1}{8}$) was given every three or four hours; to children from 1 year to 3 years of age the dose is one tablet. Care must be exercised in increasing dose for age.

The cases treated during the fine weather of October and November were discharged cured in from two to three weeks, although from the commencement the intensity of the symptoms was modified. All but one were taken in hand as early as the affection was recognized; this excepted one had been whooping and vomiting for several days, and yielded almost as readily as the other.

The weather throughout was favorable, but many patients were of the poorest class, and received little care.

Attention to this use of carbolic acid was directed first by Dr. Macdonald, of Liverpool, England, as long ago as 1881.

THE TREATMENT OF TYPHOID FEVER BY CORROSIVE SUBLIMATE.

In the *Deutsches Archiv für Klinische Medizin* of November 30, 1886, GLÄSER, of Hamburg, reports the results obtained in twenty-three cases of typhoid fever by the use of corrosive sublimate. The cases selected were those in which the diagnosis was plain, and which were of at least moderate severity, and which had not advanced so far that medication was useless. The number of cases treated was too small to be of value in statistics of mortality, but large enough to give a result as to the effects of the drug upon the principal symptoms of typhoid.

The following were the results obtained:

1. In twenty-three cases five deaths, a mortality of twenty-one per cent.

2. Four cases showed a fall in temperature to the normal before the nineteenth day of illness, on the thirteenth, fifteenth, sixteenth, and nineteenth days respectively after sublimate was given on the sixth, eighth, and tenth days.

Two parallel cases which had no sublimate showed a fall of temperature on the fifteenth and sixteenth days.

Six cases showed a fall of temperature to the normal on the twentieth to twenty-third days after two doses of sublimate on the

eighth day, and on the ninth, tenth, eleventh, and fifteenth days, one dose.

Five parallel cases, without the sublimate treatment, showed similar defervescence.

In eight further cases the fall to normal temperature came later; two on the fifteenth day, one on the sixteenth, two on the seventeenth, one on the eighteenth, one on the twentieth, one on the twenty-second day after taking the sublimate.

3. Sublimate had no influence upon the condition of the tongue; in eight cases it remained dry, and did not alter until defervescence occurred.

4. The roseola of typhoid was in eleven cases aggravated by sublimate to such a degree that the face was affected, and the cases resembled measles.

5. The general condition of the patient was not in the least improved.

The influence of the treatment on the duration of the illness and its relapses is best shown by the following table:

Day of administration.	Duration of fever.	Day of administration.	Duration of fever.
6.....	60 days.	10.....	51 days.
7.....	66 " (Relapse.)	11.....	74 " (Relapse.)
8.....	51 " (Relapse.)	12.....	89 " (Relapse.)
9.....	41 " (Relapse.)	13.....	51 "
	48 " (Relapse.)	14.....	64 "
	90 " (Relapse.)	15.....	59 "
	44 " (Relapse.)		51 "
	45 " (Relapse.)		
	64 " (Relapse.)		

The question of greatest interest in these reports is the dosage and the bearing of the cases upon the possibility of effectually destroying the bacillus of typhoid fever in the organism. When the amount of blood (at one-thirteenth of body-weight) to be disinfected is considered, we find that using a solution of sublimate, 1 to 4000 or 5000, its proportion to the blood would make the actual proportion of mercurial to the blood $\frac{1}{10400}$, which is a solution inert as a parasiticide. In the series of cases cited it was given in eight doses *pro diem*, the total given being three-tenths of a grain in a day and a half, the solution used being 1 to 4000 or 5000.

The series illustrates in an interesting manner the difficulty of practically disinfecting the blood while still within the body without at the same time destroying life.

THE ACTION AND THERAPEUTIC VALUE OF VEGETABLE ASTRINGENTS.

The term astringent in its widest sense as including styptics may be defined as referring to substances which either when locally ap-

plied or after absorption into the blood cause contraction of the tissues, diminish secretion, and arrest hemorrhage. Those which so act after absorption into the blood are known as remote astringents, and include acids, many salts of the heavier metals, ergot, digitalis, gallic and tannic acids, and many of the substances containing them. To the last of these it is customary to apply the name of vegetable astringents, and their mode of action and therapeutical value has been carefully investigated by DR. RALPH STOCKMAN, who publishes his results in the *British Medical Journal* for December 4, 1886. His paper includes an elaborate series of experiments as to the mode, form, and amount in which these bodies are absorbed and circulate in the blood, and are excreted, and as to their action on the blood-vessels and circulation.

Our space will not permit an analysis of these experiments, for which we must refer the reader to Dr. Stockman's paper. His conclusions as to the therapeutic value of vegetable astringents are, however, of considerable interest and value. Considering gallic acid first, he says that either when locally applied, or after absorption into the blood, gallic acid evidently exercises no other action than that of a weak inorganic acid, and certainly has no claim to any special action as an astringent. The only action which it can have in this direction is the power which it possesses, in common with all other acids, of diminishing the alkalinity of the blood, and thereby increasing its tendency to coagulate. Stronger acids, however, will act much more powerfully in this direction than it does. Any influence in lessening the calibre of the blood-vessels, either by peripheral or central action, must be denied to it. When locally applied, the fact that it does not precipitate albumen must prevent it having any influence on a catarrhal inflammation.

As regards tannic acid, the matter is somewhat more complicated. Locally applied, its action for good depends on its power of precipitating albumen, the layer of tannate of albumen which is formed acting as a protective to the underlying mucous membrane. To this action is due its value in catarrhal inflammations of the alimentary canal, and in discharging surfaces generally.

The preceding experiments show, however, that its usefulness is limited to such cases, and that as a remote astringent it is valueless. In weak solution and uncombined its action on contractile tissues, such as the vascular walls, is simply that of a dilute acid, while it

is only when stronger solutions are used (much stronger than can ever exist in the blood, even if it were not in combination there) that its power of precipitating albumen comes into play. When its chemical affinities have been satisfied by neutralizing it with a base or with albumen, it is no longer capable of precipitating albumen, and exercises, therefore, little or no influence on the parts with which it comes in contact.

Independently of these considerations, the very small quantity in which it exists at any one time in the blood, and that in combination, must also militate against its having any remote action. As we have seen, the only channels of excretion besides the bowel are the kidneys, and hence it is hardly possible that it can have an astringent action on any of the other mucous membranes, such as the bronchial. It is now almost an axiom in therapeutics that substances which do not possess a very decided general action can affect only those mucous membranes by which they are excreted, and it is improbable that tannin is any exception to this.

With regard to its action on the kidneys, it is conceivable that it may have a favorable influence in diminishing albuminuria, but even this is to be regarded as doubtful. Many eminent clinicians have expressed disbelief in its value, and the only cases which the author has been able to find, in which the amount of albumen in the urine was carefully estimated from day to day, tend to confirm this view. They are four cases of chronic Bright's disease reported by Briese (*Deutscher Archiv. f. Klin. Med.*, xxxiii., p. 220, 1883) in which the administration of tannate of sodium for long periods had no influence, either on the amount of urine or the albumen present in it.

FATAL POISONING FOLLOWING TWO VAGINAL DOUCHES WITH CORROSIVE SUBLIMATE SOLUTION.

FLEISCHMANN, of Prague, reports the following instructive case: A perfectly healthy primipara, aged 17, exhibited no symptom of kidney-disease or of any other complication of pregnancy. To disinfect the vagina before labor two douches of 1 to 2000 solution of sublimate were given, one before and one after examination by a midwife. It was noticed that a small amount of bloody mucus was expelled from the vagina after the douches. In a few hours abdominal pain, diarrhoea, and a rise of temperature occurred, all the symptoms and lesions of mercurial poisoning developed, ne-

phritis, salivation, and continued diarrhoea, and, after giving birth to a living child, the patient died in coma on the ninth day after the douches were given. The pathological anatomical diagnosis made at the autopsy was "corrosive sublimate intoxication, acute nephritis, dysentery, stomatitis and pharyngitis in the stage of ulceration, parenchymatous degeneration of heart and liver, lobar and lobular pneumonia, bilateral, acute cystitis."

On investigation it was found that after receiving the douche the patient had left her bed and gone about her work in the ward. It is not probable that any considerable amount of fluid remained in the vagina after the douche, as all ordinary precautions were taken to secure its expulsion. It is, however, quite possible that some of the fluid may have gone into the uterus and become absorbed by any superficial lesions which had occurred in the beginning dilatation of the os uteri.

It was also true that the patient had diarrhoea before the douches were given, and in his remarks upon the case Fleischmann calls attention to the danger attending the use of sublimate in puerperal patients in whom any lesion or disordered condition of the kidneys or bowels exists. He quotes the words of a well-known obstetrician, who asserts that the use of sublimate should be limited to the disinfection of the external genitalia and hands and instruments.—*Centralblatt für Gynäkologie*, No. 47.

THE MYDRIATIC PROPERTIES OF HYDROBROMATE OF HYOSCINE.

MR. JOHN TWEEDY states in the *London Lancet* for December 4, 1886, that he has found that a few drops of hydrobromate of hyoscine in a half of one per cent. solution proved to be a rapid, powerful, and unirritating dilator of the pupil alike in the healthy and in the inflamed iris, and a paralyzer of the accommodation. Notwithstanding its great activity, when given internally or subcutaneously, he has not yet met with any instance of its producing toxic effects, such as occasionally follow the use of duboisine, though these contingencies may be possible with stronger solutions. Mr. Tweedy has found that the action of hyoscine is almost three times as rapidly produced as by atropine in removing the "nearest point," in paralyzing accommodation and in fully dilating the pupil, while the effects of hyoscine also last longer than those of atropine, and are not so easily counteracted by eserine. The indication seems to be that if hyoscine is to find a place

in ophthalmic therapeutics, it will be chiefly in cases of iritis and in other conditions where it is desirable to produce as much dilatation of the pupil as possible, and for as long a time as possible.

It is further worthy of note that the application of hyoscine to the eye does not seem to cause the unpleasant taste and feeling in the throat which often follows the use of atropine.

THE ANTISEPSIS OF THE HANDS.

BELAIEFF; of Kiew, recommends the following as a sure and easy method of cleansing and disinfecting the hands:

Before the disinfecting fluid is applied the hands are thoroughly rubbed with a vaseline salve containing the coloring-matter called aqua-marine, in the proportion of 1 to 5 or 8 of vaseline.

The nails and spaces about the nails should be thoroughly filled with the salve, and its color affords a good indication of the thoroughness of its application. The hands are then well scrubbed with soap and brush until every particle of color has disappeared, when a thorough douching with solution of corrosive sublimate, 1 to 2000, completes the process.

Kümmall has stated that an efficient disinfection of the hands occurs when they are brushed for three or five minutes with potassium soap, and then thoroughly washed with three or five per cent. solution of carbolic acid, one-tenth of one per cent. solution of sublimate, or one-third of one per cent. solution of thymol.—*Pharmaceutische Post*, December 11, 1886.

CALOMEL AS A DIURETIC.

The virtues of calomel have in these days come to be somewhat undervalued, a reaction doubtless from the indiscriminate prescription of former times. DR. MENDELSON (*Deutsch. Med. Woch.*, No. 45) calls attention to its value as a diuretic, especially in cardiac dropsy, basing his remarks upon papers recently published by Dr. Jendrassik, of Pesth, and Dr. Stiller, already fully described in the *GAZETTE*. The former, having noticed the marked diuresis which ensued in a severe case of cardiac dropsy after the administration of jalap and calomel, found by further observation of other cases that this effect was due to the calomel and not to the jalap. In the great majority of the cases the daily quan-

tity of urine reached from two to five or more litres on the second to fourth day of calomel treatment. Stiller's experience is confirmatory of this, and Dr. Mendelsohn adds his own testimony to the value of the prescription. He says that when calomel is prescribed in doses of from 0.2 to 0.3 gramme (*i.e.*, 3 to 5 grains) three times a day, diuresis occurs within eight hours. It is not necessary to induce salivation to get this result, which often takes place with surprising rapidity; the anasarca and serous effusions disappear, and the patient is much relieved. It is said to be even more effective than digitalis, squills, and other remedies in certain cases, especially when the pulse-tension is not very low. Calomel does not, however, act through the heart, and is often advantageously combined with digitalis.—*The Lancet*, November 20, 1886.

INCONVENIENCES IN THE USE OF TINCTURE OF IODINE.

The *Répertoire de Pharmacie* for 1886 describes a method of removing the disagreeable yellow stain which remains after the application of iodine:

In the case of the hands where the skin has become hardened we can employ dilute ammonia, soda, charcoal, or common soap; but in treating women whose skin is tender, and in those parts of the body where the integument is not hardened, we prefer the sulphites, the bisulphites, or alkaline hyposulphites, substances inodorous and non-irritating, which absorb iodine by both their acid and their base.

We have used especially the sulphite of sodium in solutions of $\frac{1}{16}$ to $\frac{1}{8}$. This is pencilled upon the place where the iodine has been applied or used in compresses. In a few moments after application the pain and irritation caused by the iodine have disappeared.

EXPERIMENTAL RESEARCHES ON THE BIOLOGICAL ACTION OF BERBERINE.

CURCI's experiments lead him to the following conclusions (*Annali di Chimica e de Farmacologia*, July, 1886): Berberine has a paralyzing action on the brain, and especially on the voluntary motor centres, and on the centre for food appetite. It has a weak action on the sensitive centres. On the spinal cord and on the reflexes it acts late,—that is, when the blood circulation is very languid and the

heart is nearly paralyzed. This is in mammals. In batrachians the reflexes persist even after the arrest of the circulation. At the time it acts on the respiratory centres, at first exciting and then paralyzing them. The action of berberine on the circulation is rapid and energetic, the vessels are paralyzed, and the blood rushes to the periphery. The arterial pressure falls to zero, the heart beats more frequently, and the temperature falls. The vaso-motor nerves are first paralyzed, and then the muscular fibres of the heart and of the vessels. In consequence of the vascular paralysis all the other functions languish, and the state of the circulatory system may be the true cause of death, in which respiration is first arrested, and immediately afterwards the heart. It has no action on the vagus, either excitant or paralyzing, even in toxic doses. It causes a fall in temperature by increased dispersion of heat, in consequence of the vaso-motor paralysis, and it is not a poison of the protoplasm. Under the influence of berberine blood remains for a longer time undecomposed, and yields oxygen with more difficulty. It relaxes the tissue of the spleen, and increases rather than diminishes the size of this organ. It increases the peristaltic action of the intestine, both by its direct local action and by its general action after it has been taken into the blood-current; and produces at first diarrhoea and then a condition resembling dysentery. Acid urine is secreted even in the herbivora (rabbits). At times it is albuminous, and contains granular epithelial casts. The kidneys are congested, and sometimes present the signs of inflammation. Most of these conclusions were already published by the author in 1881.—*The London Medical Record*, No. 136, October 15, 1886.

THE DETECTION OF BLOOD-CLOTS IN THE PRESENCE OF IRON RUST.

DANNENBERG has found a new crystalline substance, which he calls hâmidin, the formation of which, in a crust in which blood is suspected, he considers a proof positive of its presence. It is produced in the following manner:

Two, four, or six drops of strong solution of potassium hydrate are dropped upon the crust, and allowed to remain there an hour. When the crust has softened it is carefully transferred to a porcelain dish and washed. A few drops of ammonium sulphate are added and the whole gently warmed. After ten minutes water is added and the whole fil-

tered. The filtration proceeds slowly, but the first drops show by the method of Erdmann the new crystals. A drop of the filtrate is placed upon a slide and dried, and a little acetic acid added. If blood be present, a mass of brown, rhombic plates appear, with a clearer, lighter spot in the centre; they are thought by Dannenberg to be proof of the presence of blood.

Crystals of other shapes are formed, and of other substances, but they do not present the characteristic features of h  midin. This substance is formed from blood by diluting it with two parts water, adding chloride of iron, and, after removing supernatant fluid, adding to the sediment ammonium sulphate. Water is added and the whole filtered, and the crystals are found in the filtrate.—*Deutsche Medicinal Zeitung*, December 9, 1886.

As an example of the prompt detection and correction of an error, Dannenberg, in the *Pharmaceutische Centralhalle* of recent date, states that he has repeated his experiments in the light of adverse criticism made by Amthor in the *Chemiker-Zeitung*, and agrees with his critic that the crystals which he found are *not* peculiar to blood, but are those of sulphur formed from the ammonium sulphide.

The whole is an interesting example of a recognized error in science, and may serve as a caution to those who work in physiological chemistry.

THE MANAGEMENT OF SIMPLE CONSTIPATION.

The untoward consequences of constipation are always considerable and sometimes serious; and greater than the an  mia, the blood-poisoning, the headache, the nervousness, and the heart disorders which rise out of f  cal retention are the untoward consequences of ignorant and unskilful domestic management.

In the *Lancet* for January 1, 1887, SIR ANDREW CLARK formulates the following brief and concise rules for the management of simple constipation:

1. On first waking in the morning, and also on going to bed at night, sip slowly from a quarter to half a pint of water, cold or hot.
2. On rising, take a cold or tepid sponge-bath, followed by a brisk general towelling.
3. Clothe warmly and loosely; see that there is no constriction about the waist.
4. Take three simple but liberal meals daily; and, if desired, and it does not disagree, take also a slice of bread-and-butter and a cup of tea in the afternoon. When tea is used it should

not be hot or strong, or infused over five minutes. Avoid pickles, spices, curries, salted or otherwise preserved provisions, pies, pastry, cheese, jams, dried fruits, nuts, all coarse, hard, and indigestible foods taken with a view of moving the bowels, strong tea, and much hot liquid of any kind, with meals.

5. Walk at least half an hour twice daily.
6. Avoid sitting and working long in such a position as will compress or constrict the bowels.
7. Solicit the action of the bowels every day after breakfast, and be patient in soliciting. If you fail in procuring relief one day, wait until the following day, when you will renew the solicitation at the appointed time. And if you fail the second day, you may, continuing the daily solicitation, wait until the fourth day, when assistance should be taken. The simplest and best will be a small enema of equal parts of olive oil and water. The action of this injection will be greatly helped by taking it with the hips raised, and by previously anointing the anus and the lower part of the rectum with vaseline or with oil.
8. If by the use of all these means you fail in establishing the habit of daily or of alternate daily action of the bowels, it may be necessary to take artificial help. And your object in doing this is not to produce a very copious dejection, or to provoke several smaller actions; your object is to coax or persuade the bowels to act after the manner of nature by the production of a moderate more or less solid-formed discharge. Before having recourse to drugs, you may try, on waking in the morning, massage of the abdomen, practised from right to left along the course of the colon; and you may take at the two greater meals of the day a dessertspoonful or more of the best Lucca oil. It is rather a pleasant addition to potatoes or to green vegetables.
9. If the use of drugs is unavoidable, try the aloin pill. Take one half an hour before the last meal of the day, or just so much of one as will suffice to move the bowels in a natural way the next day after breakfast. If it should produce a very copious motion, or several small motions, the pill is not acting aright; only a fourth, or even less, should be taken for a dose. When the right dose has been found it may be taken daily, or on alternate days, until the habit of daily defecation is established. Then the dose of the pill should be slowly diminished, and eventually artificial help should be withdrawn. The aloin pill is thus composed: \mathcal{R} Aloin  , $\frac{1}{2}$ gr.; extr. nucis vom., $\frac{1}{2}$ gr.; ferri sulph., $\frac{1}{2}$ gr.; pulv. myrrh  , $\frac{1}{2}$ gr.; saponis, $\frac{1}{2}$ gr. Fiat pil.
1. If the f  ces are dry and hard,

and if there is no special weakness of the heart, half a grain of ipecacuanha may be added to each pill. Should the action of the pill be preceded by griping and the character of the action be unequal, half a grain of fresh extract of belladonna will probably remove these disadvantages. If the aloin pill gripes, provokes the discharge of much mucus, or otherwise disagrees, substitute the fluid extract of cascara sagrada, and take from 5 to 20 drops in an ounce of water either on retiring to bed or before dinner. And when neither aloin nor cascara agrees, you may succeed by taking before the mid-day meal 2 or 3 grains each of dried carbonate of sodium and powdered rhubarb.

The exact agent employed for the relief of constipation is of much less importance than its mode of operation. If, whatever the agent may be, it succeeds in producing after the manner of nature one moderate-formed stool, it may be, if necessary, continued indefinitely without fear of injurious effects.

HYDRASTINE.

In the root of *Hydrastis canadensis*, besides berbine, a second alkaloid, hydrastine, is known to occur. An investigation of it has yielded interesting results to MESSRS. FREUND and W. WILL (*Berichte*, xix. 2797). Hydrastine was found to be most conveniently obtained by exhausting the finely-powdered root with ether, dissolving the residue left on evaporation in hot alcohol, and filtering; on cooling, the hydrastine crystallizes out almost pure. Analysis of the base and of an iodo-methyl compound confirmed the formula $C_{22}H_{23}NO_6$. Upon oxidation by means of potassium permanganate or dilute nitric acid, the base split up, a crystalline acid separating, which proved to be identical with opianic acid. From the filtrate a crystalline base was separated, melting at $115^{\circ} C.$, and very soluble in ether, alcohol, and chloroform, which so closely resembled cotarine, the base yielded together with opianic acid by the oxidation of narcotine, that it might have been considered identical had not an analysis shown that its composition was different. This resemblance of hydrastine to narcotine, from which it differs in its empirical formula only in containing one atom of oxygen less, was increased by the fact that the base resulting from its decomposition forms a crystalline hydride corresponding to hydrocotarine. It has been alleged that the root also contains two other alkaloids, to which the name of

"xanthopucine" and "canadine" have been given; but the authors failed to detect any other base than berberine and hydrastine. They separated, however, a crystalline neutral substance, apparently a kind of lactone, which, when treated with nitric acid, formed a crystalline nitrogen compound; this is to be the subject of further examination.—*The Pharmaceutical Journal and Transactions*, November 27, 1886.

HYPNOTIC PROPERTIES OF BOLDO-GLUCINE.

DR. RENÉ JURANVILLE, of Paris, has published as a graduation thesis an account of some experiments and observations on boldo-glucine, an aromatic substance of the nature of a glucoside, obtained by M. Chapoteaut from the leaves of the *Pneumus boldus*, or *Boldo fragrans*, a plant belonging to the *Mominiaceæ*, which has from time immemorial been employed by the natives of Bolivia, Chili, and Peru in hepatic diseases. The boldo-glucine used M. Juranville is not the same substance as boldine, which is an alkaloid existing in very small quantity in the leaves, and which was isolated in 1874 by MM. Cl. Verne and Bourgoin. The observations were directed to the hypnotic action of the glucoside, and were conducted on both animals and human subjects. Dogs were sent to sleep by intravenous injections of boldo-glucine, in quantities of from two to seven grammes. Observations were taken and curves constructed, showing that during the sleep produced the cardiac beats increased in rapidity, while the amplitude of the pulsations diminished; the arterial pressure was not affected. M. Juranville also gathered from his observations that anæmia of the brain was produced. His therapeutic researches were conducted on insane patients, the doses given being from 22.5 grains to 2 drachms, the substance being enclosed in gelatin-capsules or introduced by means of enemata. It was not found easy to administer it in the form of draughts on account of their powerful odor. It gave rise to no disagreeable symptoms, and, indeed, appeared to stimulate the appetite and the digestive functions. The hypnotic effect was very definite, ten patients on whom it was tried being all sent to sleep, and in some cases their hallucinations being removed; the effect was not, however, permanent, the sleeplessness and hallucinations returning on the cessation of the treatment. M. Juranville concludes that though boldo is not a perfect hypnotic, it is likely to prove valuable in cases

of neurotic or maniacal insomnia when other drugs have been tried without effect. Further study of its action is, of course, required before any very decided opinion as to its efficacy can be expressed.—*The Lancet*, October 16, 1886.

THE ACTION OF THE COMMON ALKALINE METALS AND EARTHS.

Potassium, sodium, lithium, calcium, and magnesium form the three following pharmacological groups, according to their action in mammals. The action of these agents has been investigated by CURCI (*Annali di Chem. e di Farm.*, June, 1886) with the following results : 1. The salts of potassium,—muscular agents, at first stimulant, then paralyzing. 2. The salts of sodium and lithium,—nerve agents, causing convulsions. 3. The salts of calcium and magnesium,—paralyzing nerve agents. However, while they manifest these three principal types of action on the nervous and the muscular systems, they have an almost identical action on the heart and circulation. They all at first cause increase of the blood-pressure, with slowing and strengthening of the pulse, and then lowering of the blood-pressure, with quickening and weakening of the pulse, and finally paralysis of the heart. Dr. Curci finds that when the medulla oblongata, and therefore the vaso-motor centre, is destroyed, potassium, sodium, lithium, and calcium produce increased blood-pressure, with slowing and strengthening of the pulse. Magnesium has no such effect. The first four, therefore, have a peripheral, magnesium a central, action. When the peripheral vaso-motor system is paralyzed by curare, sodium, calcium, and magnesium do not increase the blood-pressure, or but very slightly; while potassium and lithium, as in the normal state, markedly increase the pressure and render the pulse slower and stronger. Sodium, magnesium, and calcium therefore act on the peripheral vaso-motor nerves; while potassium and lithium act on the muscular fibre of the heart and blood-vessels. Potassium in mammals acts more rapidly and energetically on the vessel and heart muscular fibre than on the voluntary striated fibre; but, speaking generally, it acts on all voluntary and involuntary muscles, while it has no direct or manifest action on the nervous system. In the Batrachia, on the contrary, potassium acts first on the nervous centres and then on the peripheral nerves; afterwards on the voluntary muscles, and, lastly, on the heart. This is probably due to the low temperature of the

blood in batrachians. Curci finds that when frogs and toads are kept in hot water until their temperature equals that of a mammal, potassium acts in the same way as in warm-blooded animals. In this experiment, many times repeated, the heart was arrested before the complete abolition of reflex and voluntary movement. The excitability of the myocardium is exhausted before that of the striated muscles. In batrachians, therefore, at a low temperature the nerve-tissue is more sensitive than the cardiac muscle to the action of potassium; while at a high temperature this is reversed, and the heart becomes more sensitive than the nerves, just as in mammals.—*London Med. Record*, October 15, 1886.

URETHAN AND ITS ANTICONVULSIVE ACTION.

In the *Vratch*, Nos. 31 and 32, 1886, PROFESSOR VASILY VON ANREP, of Kharkov, publishes an important paper embodying the results of his extensive experimental researches on the action of urethan on the nervous system in frogs, rabbits, dogs, and pigeons (*London Medical Record*, December 15, 1886).

General phenomena of urethan-poisoning are almost identical and constant in all the animals named. First symptoms induced by the drug are a more or less intense general excitement, and quickening of the breathing and cardiac action. The period of excitement lasts always a relatively short time, but is the shorter the larger is the dose given. It is followed either by a complete recovery, or by a second period, which is characterized by immobility, failure of reflex action, retardation of breathing, decrease of the temperature, and a more or less deep sleep, the intensity and duration of which symptoms vary according to the dose and individuality of the animal experimented upon. In young dogs the hypnotic action of urethan seems to be stronger than in the older ones. When the dose is very large (fatal), a third and last period of the poisoning takes place; it is marked by a further retardation of respiration, absolute unconsciousness, absence of reflexes, enormous fall of the temperature, and weakened and retarded cardiac action. This period is very prolonged, and invariably leads to death from asphyxia. The fatal dose for a frog is as large as 0.4 gramme; for a rabbit 7 grammes per kilogramme of the animal's weight; for a dog, 5 grammes per kilogramme. Therefore, urethan possesses

but relatively slight toxic properties. Meanwhile, its action on the nervous system is very pronounced even when the drug is administered in comparatively small doses.

Reflex Action.—In frogs, small doses (0.03 to 0.1 gramme) are inactive; moderate doses (0.15 to 0.2 gramme) markedly lower the reflex action; large doses (0.25 to 0.35 gramme) not only decrease the latter but also lower irritability of the peripheral endings of motor nerves. The failure of reflexes always precedes the change in irritability of the nerve-endings, takes place not earlier than about half an hour after the poisoning (that is, only when the hypnotic influence of the drug is in full action), and disappears with the animal's awakening from narcosis. After large doses, a full prostration ensues in half to one and a half hours; it depends solely upon paralysis of the spinal cord. In warm-blooded animals, a short period of increased reflex action is observed, and only subsequently (after large doses) a decrease of the latter follows.

Sleep.—An average hypnotic dose for a dog and rabbit is 0.5 gramme per kilogramme. Easily excitable nervous dogs require considerably larger doses than the phlegmatic. After a 5- to 8-gramme dose, the animal falls asleep within twenty to forty minutes. The duration of sleep varies from several hours to two or three days. After awakening, general weakness, unsteady movements, and loss of appetite are observed. After a 10-gramme dose, the weakness lasts more than for twenty-four hours. Sensibility is more or less lowered for a short while before, during, and for one to ten hours after sleep.

Temperature.—A pronounced antipyretic action of urethan (which was first pointed out by Dr. Coze, and certainly deserves every attention of practitioners) is pretty constant. The fall of the (normal) temperature commences soon after the animal's falling asleep, may reach (according to the dose used) from 1° to 4° C., and last from two to six hours, to rapidly disappear after awakening. Fatal doses give rise to an enormous fall of the temperature (reminding only of cases of curare-poisoning). Thus, in a rabbit of five hundred and thirty grammes in weight, poisoned by 3½ grammes of urethan, the temperature within four hours fell from the original 39.7° to 32.8° C., to descend as low as 26° C. by the end of twenty-four hours (death ensuing on the fourth day).

Psychomotor centres, as examined in dogs, show a considerable and prolonged (several

hours) decrease of faradic excitability under the influence of hypnotic doses of urethan. Small doses of the drug produce only a short and slight increase of the irritability.

Anti-convulsive Action.—In view of a pronounced action of urethan on the spinal cord, Professor Anrep undertook a special series of experiments to study its relation to various convulsive poisons, such as strychnine, picrotoxicine, nicotine, and resorcin. In frogs, urethan may arrest or prevent convulsions caused by strychnine, but cannot either bring recovery or even delay the animal's death; on the contrary, its large doses accelerate death from strychnine (since both of the drugs kill by inducing paralysis of the central nervous system). It is otherwise in regard to dogs, rabbits, and warm-blooded animals generally, in which death in the case of strychnine-poisoning is very often caused by asphyxia, in consequence of tetanic contractions of the diaphragm and thoracic muscles. When the animal has been poisoned by a moderate dose of strychnine, an early internal administration of a few grammes of urethan pretty surely prevents, or at least considerably soothes, convulsions. A repeated administration of large doses of urethan may save the animal poisoned by a relatively small fatal dose of strychnine. In cases of poisoning by very large doses of the latter drug, urethan only arrests convulsions and postpones death. The same may be stated as regards the relation of urethan to picrotoxicine, nicotine, and resorcin. In other words, urethan possesses an anti-convulsive action, and may be usefully administered in cases of intoxication by convulsive poisons, as well as in diseases associated with convulsions. In this regard urethan occupies a higher stand than chloral, since, being as effective as the latter, it is free from any dangerous action on the organs of respiration and circulation. Judging from his experiment on dogs, Professor Anrep thinks that the doses of 8 to 12 grammes for an adult man may be given without fearing any dangerous or unpleasant accessory effects. At all events, in cases of poisoning, any good may be expected only from such large doses, since the smaller ones (3 grammes) would only give rise to a rather intense initial excitement. The most convenient mode of the administration of urethan in large doses is that through the rectum. The ingestion of large doses produces gastric disturbances.

LANTANINE.

Lantanine is an alkaloid discovered by M. Negrete, and extracted from *Yerba sagrada* of the family of verbenas. M. BUIZA has observed that, like quinine, this alkaloid had some action on the circulation. It slows the nutrition, and at the same time lowers the temperature. The most delicate stomachs tolerate lantanine. Intermittent fevers that prove refractory to quinine have yielded to the influence of 2 grammes (30 grs.) of lantanine. In order to produce antipyretic effects in febrile conditions the dose employed is from 1 to 2 grammes in twenty-four hours, given in pills of 10 centigrammes ($7\frac{1}{2}$ grs.). In intermittent fevers the drug is administered immediately after the paroxysm. Ninety-five times out of a hundred a further paroxysm will not appear. The tincture of lantana cannot be employed owing to its intense bitterness, which cannot be masked by syrup or wine.—*The Lancet*, October 16, 1886.

GUAIAECUM AS AN EMMENAGOGUE.

In the *Birmingham Medical Review* for January, 1887, SIR JAMES SAWYER states that he has given guaiacum in a large number of cases, and regards the drug as an active remedy in promoting the menstrual secretion in a large proportion of cases of amenorrhœa. It appears most efficient, when given alone, in those cases in which the cause of the amenorrhœa is obscure; that is, in those cases in which there is no obvious spanæmic deterioration to which the menstrual deficiency is referable. He gives 10 grains of the powdered resin of guaiacum, stirred in a wineglassful of milk, every morning before breakfast. The remedy may thus be given safely for some weeks. In a few instances it has been found to be necessary to suspend temporarily the administration of the drug, on account of the production of a little abdominal pain and purging.

In some cases of dysmenorrhœa guaiacum has been found to possess considerable curative efficacy. In those cases of dysmenorrhœa in which we can find no vice producing menstrual obstruction of a mechanical nature, and in which there are no inflammatory or plethoric signs, the ammoniate tincture of guaiacum is a reliable remedy when given during the painful period. From half a drachm to a drachm may be given as dose in a wine-glassful of water every two or three hours until the pain is relieved.

PHOSPHATIC DIABETES.

At a recent meeting of the Medical Society of London, as reported in the *Lancet* for January 15, 1887, DR. RALFE introduced to the notice of the Society a patient suffering from phosphatic diabetes, and read particulars of twelve others. These he arranged in groups according to the classification of Professor Teissier, who first gave a systematic account of the affection. Group 1. Excessive elimination of phosphoric acid associated with nervous derangements; three cases. Group 2. Excessive elimination of phosphoric acid associated with phthisis; three cases. Group 3. Excessive elimination of phosphoric acid alternating with saccharine diabetes; three cases. Group 4. Excessive elimination of phosphoric acid running a distinct course, like saccharine diabetes, only without the sugar; five cases. All the cases, with the exception of two, were young adult males. The symptoms common to all were great emaciation, aching rheumatic pains in loins and pelvic regions, dry, harsh skin, with tendency to boils, and ravenous appetite; in some cases cataract develops. In the majority there was polyuria; in others the urine was normal in quantity, with a high specific gravity. The urea was increased in some cases slightly, in others to a greater extent; but the great feature of all the cases was the very considerable and constant elimination of phosphoric acid, with or without increase of the other constituents of the urine,—a feature which distinguishes it from insipid diabetes on the one hand and azoturia on the other, with both of which it has been improperly confounded. The pathology, Dr. Ralfe thinks, depends not so much on increased metabolism of nervous matter as on defective nutrition, so that the tissues are not able to utilize the phosphorus brought to them, and consequently a greater amount passes through the system daily. In those cases in which an excessive excretion of phosphoric acid replaces saccharine diabetes, it is probable that acids like oxy-butyric-glycollic, etc., formed by imperfect oxidation of the sugar, dissolve out the earthy phosphates from the tissues, which appear in excess in the urine. As regards the prognosis in these cases, it is most unfavorable in the first two groups; country air, massage, cod-liver oil, may for a time do good, but the patients rapidly fall back, and either are carried off by some acute attack proving fatal in their exhausted condition, or drift on into phthisis or into diabetes mellitus. The prognosis of the last two groups is much more favorable: of the three cases recorded in

Group 3, two got completely well; the third still suffers from saccharine diabetes, but it remains in a mild form.

MR. W. A. MEREDITH and MR. A. P. GOULD made some remarks.

In reply to Mr. B. Carter, DR. RALFE said that there was only the volumetric method, uranium nitrate being the agent used to precipitate the phosphates. Care must be taken that a specimen of the mixed twenty-four hours' urine is used to estimate the daily discharge of phosphates.

Reviews.

VON ZIEMSEN'S HANDBOOK OF GENERAL THERAPEUTICS. Vol. V.

New York: William Wood & Co., 1886.

The fifth volume of this encyclopædia masquerading under the name of a handbook is occupied by two elaborate treatises. The first of these is written by Prof. F. Rusch, of Berlin, and translated by Dr. Noble Smith. It considers general orthopædics and massage. Of its two hundred and seventy-five pages over two hundred are occupied with a discussion of the causes, symptoms, and diagnosis and treatment of deformities. Its general characteristics are similar to those of previous articles in the book, thorough, Germanic; it must not only be of value to every general practitioner who essays to treat diseases which are discussed in these pages, but also to the well-read specialist. As instances that its author is more familiar with German habits than with those of the Anglo-Saxon, may be mentioned the statement that the bicycle, or, as it is called in the book, the two-wheeled velocipede, is preferable to the horse, because "its rider does not run the danger of considerable injury from a fall." Certainly the Anglo-Saxon two-wheeler is a more dangerous beast than is its quadruped rival.

The second half of the book before us is occupied by a treatise on "Hydrotherapeutics," by Dr. W. Winternitz. The translator, F. W. Elsner, dates his preface from Melbourne, and, if his work is to be judged as a specimen of antipodal English, we fear that noble Anglo-Saxon is in serious danger of mortal injury at the hands of our distant *confrères*. He says, "In the pious endeavor to render the translation as nearly as possible in the author's own style, the translator fears that he has now and again offended against the laws of idiom

slightly, but this he hopes will be excused him, as that can hardly be considered a translation which will be practically a rewritten work, if elaborate syntax is to be the fixed rule without departure."

The spirit of this sentence is a most aggravating one. The translator who sacrifices his native tongue to the barbarities of Teutonic involution deserves death. If he cannot properly translate German into good English, he should go to either a German or an English schoolmaster; or, if unwilling to do this, should altogether abstain from translating. The sentence we have quoted, however, evinces urgent need of English study. The adjective "slightly" ought to be in front of its verb offended; "but this he hopes will be excused him," ought to read, "for this he hopes he will be excused," since as it now stands the passive verb is made to govern the pronoun him like an active transitive verb. Again, the change of tense from the present to the future time in the next to the last clause of the sentence is atrocious. "Can be" should be followed by is, not "will be." On the whole, we commend this sentence to professors in grammar as affording an excellent exercise to their students in pointing out errors of construction. We have no doubt, as stated by Dr. Elsner, that the German of Dr. Winternitz on "Hydrotherapeutics" is extraordinary, but we are inclined to think that the translation is still more marvellous.

William Wood & Co. should have employed some one to have translated, or at least to have edited, the translation. We have wrestled with some of the sentences almost as long as Jacob wrestled with the angel, but with far less success. To drop figures, in a word, the English of this translation is often understood with difficulty. When to this is superadded the prolixity, which probably characterized the original essay, the apparent total absence on the part of the author of any knowledge of work done outside of Germany, and the indefiniteness of many of the statements, it is plain that the essay is not an attractive one. The most valuable part of it to the general reader, according to our thinking, is the account of the different methods of applying cold and hot water generally and locally. For this and for other things to be gleaned from it the treatise is worthy of study, but it still remains for some one of practised literary skill and of scientific and practical knowledge of the subject, to write for the profession a concise, readable account of "Hydrotherapeutics."

THE NATIONAL DISPENSATORY. By Alfred Stillé, M.D., LL.D., and John M. Maisch, Phar.D. Fourth Edition.

Philadelphia: Henry C. Lea's Son & Co., 1886.

The National Dispensatory is too well known by the reading medical and pharmaceutical public to require elaborate review at this date. Its virtues and its faults, its successes and shortcomings, are matters of common repute. On the appearance of a new edition it is simply the province of the reviewer to indicate how far the book has been rewritten and how thoroughly it has been revised. Examination shows that in the present edition the changes have consisted not in a thorough overgoing of the various articles, but are chiefly in revision of the references to the British Pharmacopœia, and in the addition of certain articles to the end of the book as a sort of appendix. This so-called addenda occupies about thirty-five pages, and consists of articles upon Antipyrin, Cocaine Hydrochlorate, Cascara Sagrada, Fabiana, Francisca, Gymnocladus, Hydroquinone, Hypnone, Iodol, Jacaranda, Lanolin, Menthol, Phormium, Sulphophenol, Thallin, and Urethan, and a few other unimportant matters. The fact that these articles are placed at the end of the book and not inserted at their proper position, indicates that the present is a reprint from old plates, which have been so little altered as not to modify their paging. Comparison of the pages of the two editions confirms this suspicion. Of a large number of pages looked at in the fourth edition, each commences with exactly the same syllable as does the corresponding page of the third edition.

Correspondence.

LONDON.

(From our Special Correspondent.)

You know that with an Englishman the first subject of conversation is the weather. You smile at this insular peculiarity of ours, but I trust you do not regard it as altogether unreasonable. If you were in London at this moment you would pity and sympathize with us, for you would understand how it is that the weather is always at the tip of our tongues. Cold, damp, and dirt are an unpleasant combination of miseries to live in. Our hardy Anglo-Saxon race cannot be charged with being afraid of cold, and, for the matter of that, a certain degree of damp, but we do re-

sent dirt, even when it comes in the shape of disinfectant smoke and soot. We are living in a nearly constant fog,—not constant in the degree which you have vividly realized from Dickens or Taine, but a fog that is always here to some depth, and which thickens every few days into the classical pea-soup atmosphere of these authors. Every one knows the strange adventures of the street on these occasions from the graphic pictures drawn by master-hands, but has any writer looked inside the walls to tell of the scenes within? Up the lanes and courts of this vast city, in the few square feet of a room which a whole family calls its home, what of the child ill of measles, the puerperal mother, or the father with emphysema and dilated heart? Fresh air is out of the question. Ventilation is a mockery with the oxygen choked out of the atmosphere by soot and the other foul products of the chimney. Warmth is the first consideration: windows are fastened up and stopped and stuffed. The fire is the only friend, if a fire can be afforded. What wonder if with all this the death-rate of London rise from eighteen to twenty-two in a week? Even in hospitals you may see, these days of fog, patients dying under your very eyes from asphyxia. We have to leech them, to open a vein, and to dose them with ether, alcohol, and carbonate of ammonia, in order to keep the blood moving in the heart and lungs, and the corpuscles fairly charged with oxygen. These are but poor make-shifts,—but feeble attempts to cope with an evil of our own making. Can nothing be done on a larger scale—on a scale worthy of modern applied science—to rid us of this demon, fog? We have had a smoke exhibition, a smoke abatement association, smokeless stoves, smokeless coals; but one after another they seem to have had their day and disappeared, leaving us in still deeper darkness. For myself, I cannot see how matters can do other than grow steadily worse as long as London increases in extent on its present principles of construction. Fog appears to increase with the area of chimneys in an increasing ratio. Some of us would positively try to stay the further growth of the metropolis! This is a hopeless proposal. But could we not insist, if we had anything like an intelligent municipal government, on the adoption of other means of heating and lighting? Why should every room be a smoke-centre? Does any one attempt to deny that before the present century ends we shall have discarded coal in a great measure in the kitchen? May we not

hope that heat will shortly be supplied on a large scale to great blocks of habitations in such a city as this? How much longer shall we tolerate the blazing gas in sitting-rooms and bedrooms, with its foul, noxious, if invisible, products, whilst electricity is ready at hand? I trust this reference to a question which so nearly concerns us on this side may not be considered out of place in an American journal of therapeutics. More than half of the science and art of treatment consists in prophylaxis, and the proportion is ever growing. Let the great country where towns and cities are being daily founded take careful note of our experience.

It is satisfactory to turn from what might and ought to be—but has not been—done in the direction of preserving health and life to what has been accomplished during the year which is just closing in the way of treatment among us. Short though the record of visible progress in therapeutics may be in England, there can be no question about the steady and substantial, if somewhat slow, advance of all the departments of medicine that contribute to sound scientific treatment. It could not well be otherwise. The enthusiasm manifest among us just now is extraordinary; and if I had to deplore in my last letter to you that so few of our younger men appear to have taken to practical therapeutics, I will not deny that they are doing their best to lay a sound foundation of a future science of healing. Unquestionably this activity is part of a wave that has reached us from Germany, whence have come so many of our methods and so much of the exact physiology and pathology on which our own investigations are based. But, apart from these less definite forms of progress, this country may be proud to chronicle at the end of the year the share it has taken in the improvements in the art of healing.

First among these is unquestionably the recent development of the surgery of the brain. During the past year a number of cases of cerebral tumor and other morbid conditions of the intracranial region have been subjected to surgical interference. Hardly a week now passes but one hears of some operation on the brain surpassing its predecessors in magnitude, and, as far as I have learned, performed with success. Hitherto the cerebrum has been the part of the brain attacked; but the other day Mr. Horsley, of University College and the Hospital for Epilepsy, who has performed most of these operations with us, removed a tumor

from the cerebellum. It has not been my good fortune to be present at any of these operations of Mr. Horsley's; but I am assured that nothing could be more remarkable than the freedom with which he treats the parts,—freedom, I mean, which comes of knowledge, confidence, and skill. The bone is very freely removed, and when the brain is reached one is startled by the size of the portion that may be taken away, including, of course, the morbid mass. In every instance the urgent symptoms have been relieved,—the continuous series of epileptic fits or the profound coma in which the patient may have been lying for many months. In another aspect these operations on the cerebral substance are of rare interest to us. The exact relations of the excised portions of brain are carefully ascertained, and thus not only is the regional diagnosis, made before the operation, rigidly tested, but an opportunity is afforded of studying, after the operation, the physiological effects of removal of a definite area of the convolutions. Manifestly both these series of results must be interpreted with great caution at present; the effects of inflammatory stimulation and of general intracranial pressure, on the one hand, being liable to be confounded with those of direct irritation or with paralysis from loss of brain-substance on the other hand. By and by, as cases multiply, we shall be able to eliminate these sources of fallacy. One may well envy Dr. Hughlings Jackson and Dr. Ferrier, our true pioneers of cerebral surgery, the satisfaction with which they watch the results of operations in such cases, several of which have been under their own care.

In my letter which you published in August I referred to the incursions that our surgeons had been making into another region which until quite recent times was considered to belong peculiarly to the physician. I mean the lungs. We do not appear to have gone much farther in this particular direction the last few months. No doubt the surgical treatment of diseases of the chest in general, including especially pleurisy and its multiform results, has become more definitely systematized. Here, also, as in the case of the brain, operation is constantly affording us an opportunity of testing our diagnosis, and thus of advancing our knowledge of the nature and signs of diseases of the chest, along with their treatment. I have heard nothing, so far, of the routine treatment of cavernous phthisis by intrapulmonary injections, such as I see reported in some of your American journals.

We are anxious to hear more of this system, which sounds to some of us "too good to be true." Another system of treatment of lung-disease which has just been introduced to our notice by our French colleagues is Bergeon's method of gaseous enemata. No doubt before this letter reaches the light you will have heard of the apparatus or seen it at work. I need hardly tell you that the system is being received here with great caution, not to say criticism. At first sight nothing could look less likely to be successful, or even, if useful, to commend itself in general practice, than the treatment of phthisis by the injection of a large quantity of gas into the bowel! This objection, which I suggest on the score of unpleasantness, is, however, greatly diminished when one finds that the gaseous enemata can easily be self-administered beneath the bed-clothes. When we turn to the rationale of the method we find a number of difficulties in connection with it which must be removed before we can accept this as a scientific mode of treatment. When carbonic acid gas is pumped through a bottle of Eaux-Bonnes water it carries with it a load of sulphuretted hydrogen. We are told that if this compound be introduced into the rectum by means of an ordinary enema-pipe, it is absorbed by the bowel, passes by the veins to the lungs, and is there excreted, the sulphur compounds acting as germicides in the pulmonary tissues. We are told that by this method cases of phthisis have been greatly benefited,—indeed cured,—not to speak of bronchitis, bronchiectasis, and spasmodic asthma. You will gather at once that a great deal is assumed in the account given by the authors with respect to the action of sulphuretted hydrogen introduced into the bowel. How do we know that the gas follows the route indicated, once it has entered the blood? Is it not altered in the liver, through which it must pass? One point seems clear,—that there is no odor of sulphides in the air of expiration. May the sulphur not escape by the skin, or by the kidneys, as sulphates? The practical criticism that I hear directed against the method is even more destructive. A few isolated cases of phthisis temporarily improving in a hospital, whilst being treated as special patients under a new system, are valueless as evidence. To draw any definite conclusion from instances of nervous asthma is manifestly out of the question. Still, it would be unfair to prejudge the method, and I am not going entirely by theory. It has been on its trial at the Victoria Park Hospital for Diseases of the Chest for a couple of

months, and, although this is much too short a time for judgment to be pronounced for or against a line of treatment, there is nothing encouraging in the reports that reach me.

In the department of medicinal therapeutics the greatest gain of which we have been enabled to avail ourselves has no doubt been in the allied classes of disinfectants, antiseptics, and antipyretics. We frankly confess that we have to thank our German colleagues for most of the novelties of these kinds, although Sir Joseph Lister and his pupils deserve great credit for their advocacy of corrosive sublimate in the treatment of wounds. Antipyrin has won and still holds its ground among us as a powerful antipyretic, but it must be confessed to be far inferior in activity to antifebrine, which is now being fairly tried. The weak point of these drugs is unquestionably the transient character of their febrifuge effects, as compared with quinine and the other old-fashioned methods of securing defervescence. Sparteine, which was so highly vaunted in Paris, seems to have disappointed English expectations. The diuretic effect of calomel—a remedy which has never ceased to be prescribed in dropsies by our older physicians—has been revived with success. These are but a few brief annotations of our recent experience of certain "new" remedies, which are doubtless attracting attention with yourselves.

You will hardly believe me when I tell you in as many words that one of the greatest of our London hospitals is suffering seriously at the hands of our brethren in the States. Yet I am speaking the truth. Free trade with your vast grain-growing country has reduced the value of corn to less than fifty per cent. of what it fetched a few years ago. Foreign meat is sold in Liverpool at threepence or fourpence a pound. This may sound like the millennium for the hungry mouths of our artisans, though the blessing to them is a doubtful one when its full economical effect is carefully weighed, but it is simple ruin to our farmers and land-owners. Now, one of our large land-owners is Guy's Hospital, which is mainly dependent on agricultural prosperity. The income of Guy's has fallen within a short time to as nearly as possible one-half. Guy's is a beggar for the first time in its history, which extends back more than a hundred years, and includes the glorious roll of names like those of Astley Cooper, Hodgkin, Richard Bright, Addison, not to speak of Gull, Pavy, Moxon, Fagge, Wilks, and others who have belonged to our own generation.

Yesterday a public appeal was made for one hundred thousand pounds to put the treasury of Guy's on its feet again, and, from the rate at which the money flowed in, I have little doubt the required sum will soon be raised. This is only an incident in the mendicant history of most of our London hospitals, which are, with a few exceptions, entirely dependent on charity. I trust you have more satisfactory arrangements in the States. There must be a serious waste of money in managing the crowd of institutions for medical and surgical relief which London maintains. Ought we not at once to face the problem, complex and heavy though it may be, of putting all our hospitals under the management of a single public board, and supporting them by public rates?

Before these lines have reached you we shall have entered on the jubilee year of our gracious sovereign lady, Queen Victoria, a name as dear with you as it is to us. English Medicine has just cause to celebrate the beneficent rule of the past fifty years, which has enabled it to grow from what was little more than a refined empiricism to the well-founded science which it is to-day. In this respect Medicine is but one of the many sciences that have flourished during the Victoria period. As a profession we owe to our queen far more than the general prosperity that comes of national advancement, of peace, and of social purity. It is our pride that Queen Victoria takes a special interest in us. Besides the many acts of personal favor which she has shown to those who have been near her and her family in their hours of illness, she has repeatedly given public evidence of her interest in our institutions for the study and application of medical science. Last summer she emerged from her comparative seclusion to lay the foundation-stone of the new building on the Thames Embankment, which ratifies the union for examination purposes of the Royal Colleges of Physicians and Surgeons. It is sincerely to be hoped that by the end of the jubilee year something like order will have replaced the confusion which overspreads all our regulations and arrangements for medical education and graduation in England at the present time. I also hope that a place will be found for Medicine in the great Imperial Institute which has been planned to commemorate the closeness of the federal tie that now binds our colonies and dependencies to the mother-country and their veneration for our common sovereign.

STIGMATA MAIDIS IN GONORRHŒA.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—I think if E. Stuver, M.Sc., M.D., of Rawlins, Wyoming Territory, will look on page 280 of the *Medical Record* for September 6, 1884, he will find an article on Stigmata Maidis, recommending its use in gonorrhœa. I have used the fluid extract a number of times since reading the above-mentioned article, but have been disappointed at the result. It will act very well as a diuretic in cases requiring such an agent, but I don't think it has any more beneficial influence over the course of gonorrhœa than other agents of the same class.

Respectfully,

J. W. TRISLER, M.D.

URBANA, ILLINOIS, December 20, 1886.

Notes and Queries.

A CASE OF BELLADONNA-POISONING.

We have received the following communication from a physician who, for evident reasons, desires to remain nameless.

"In July, 1882, I was to attend Mrs. J. E., æt. 30, American, and mother of six or seven children. Had given birth to twins at a previous labor. Mother and family were healthy. They were very poor, living from hand to mouth, and she had had her children at very short intervals. I found her in labor, and diagnosticated twins. In due time one child was born, large and well nourished. After waiting half an hour, and there being no indications of pains, contrary to my custom I thought I would administer ergot. My pocket-case was on a table near by, and as my hands were soiled, I asked an attendant to take a bottle out of my case, indicating the one. My attention was then called to the woman in labor (I had in the mean time been using friction of the fundus to induce contraction), and I then told the attendant to turn out half a teaspoonful. She used a tin spoon nearly twice as large as an ordinary teaspoon, and administered the dose. After waiting about twenty to thirty minutes, I told the attendant to give a teaspoonful dose, as there was no evidence of returning pains. About that time Mrs. E. complained of dryness of the throat, but I took no notice of it, as it is not an uncommon symptom. I did note that her pulse was more frequent, and she said that she could not see well, so in order to hurry things up I gave her a little more,—about a quarter of a

teaspoonful ; in fact, about all that I had. The patient wanted to be moved, and I took her under the armpits and drew her up in bed. She remarked that something had come away, and sure enough on examination I found the child's head born, but could not detect any evidence of uterine contraction. The mother now became quite delirious and talked incoherently and could not see the light. For the first time it dawned on me that there had been a mistake, and on looking at my medicine-case I discovered that the ergot bottle was in it and full, and the bottle containing fluid extract of belladonna was empty and on the table. My feelings can be better imagined than described. I immediately administered half a teaspoonful of the sulphate of zinc, and prepared a good half-grain of morph. sulph. By the time I had given the morphine (hypodermically) she had vomited with the aid of a finger in the fauces. In the mean time I had tied the cord and disposed of the child. Symptoms were becoming more alarming every moment ; pulse very rapid, and a marked redness began to show very plainly. This deepened until she looked like a lobster.

"I soon again repeated the dose of morphine. It seemed certain that I was to have a corpse on my hands, and I determined to push the morphine until I got some physiological evidence of its effect, so that within an hour I should think I gave a grain and a half. Patient was nearly unconscious, and no response could be got from her. Pupils were dilated to the utmost.

"I was anxious to get away, and told the husband that I would drive home and would be back directly. I said something about 'puerperal mania,' brought about by bearing children too fast, and that I did not think it possible his wife could recover.

"I went home in a bad state of mind, believing that I had killed the woman. In about two hours I returned, fully expecting to find a corpse. But no, the respirations were a little slower ; pupils about the same. Gave another dose of morphine, and waited about an hour for effects, and fancied that other signs looked more favorable. Respiration was certainly improving, and the iris began to show itself. I gave still another hypodermic of morphine and left her, returning in about two hours. Her condition was then much improved ; the iris was about half visible, and respiration quite natural. Again I repeated the morphine, and after waiting some time left her some morphine powders, to be taken

every four hours. I felt encouraged, but dreaded that some sequel might occur that would carry the woman off, but I felt confident that I had been on the right track so far as the antidote was concerned.

"The woman made a good recovery, and was subsequently killed by the cars.

"I have much regretted that I did not keep a more accurate record of symptoms, but really regarded the case as hopeless from the time my mistake was discovered. I am sure that she took at least f3iiss fluid extract of belladonna, and that from the time of taking the first dose up to the emesis was about an hour and a half. Probably she vomited a little of the last dose (one-quarter of a teaspoonful), but the emesis was not thorough.

"I am also sure that I gave her not less than *three grains of morphine* in about *six hours*, hypodermically, and the larger part of this was given during the first two hours.

"Two facts I am sure that I have impressed on my mind. One is that belladonna relaxes all of the structures opposing the expulsion of the foetus, and another is that morphine is an antidote to belladonna in large doses. I have also learned in my experience with morphine narcosis that atropin is very efficient, and indeed I depend mainly on it in such cases.

"D. G. P."

TREATMENT OF WHOOPING-COUGH.

Concerning Dr. Kohlmetz's treatment of whooping-cough, I would add that I have given quinine for several years with the most beneficial results, but with this difference in the manner of administration, viz., that I have used it with finely-powdered white sugar placed dry on the tongue every two or three hours. Under this treatment all my cases have invariably improved rapidly, and, when followed up properly, were cured in a short time.

GEO. A. HETHERINGTON, M.D.

SAINT JOHN, N. B., December 31, 1886.

THE INEQUALITY OF THE PUPILS IN VARIOUS DISEASES.

DR. PASTERNAKSKI, who has been working in Professor Chudnovski's clinic in St. Petersburg, has published in the *Vratch* an account of a number of observations he has been making on the inequality of the pupils in various diseases, thus carrying out a suggestion made by his chief in a work on the methods of examining medical patients. pub-

lished in 1883, in which he expressed an opinion that careful examination of the pupils would lead to interesting results. Dr. Pasternatski examined a number of methods which have been proposed, but did not find any of them suitable for his purpose, and ultimately a much simpler plan, suggested by M. Follin, was adopted. This consists in bringing a catheter gauge-card close to the eye, and comparing the size of the pupil with the apertures in the card. By this means the size of the pupil in millimetres can be ascertained with a degree of accuracy sufficient for the purpose. It is important to make the observations in the shade, for the difference, when there is any, between the diameters of the pupils increases as the light is diminished. The best method of conducting the examination is to close the eye which is not being observed, for this causes a slight increase in the diameter of the pupil of the latter, as was indeed remarked by Hippocrates. It was found, for example, in a case in which this was tested, that when both eyes (being in the shade) were fixed on an object at a distance, the diameter of the right pupil was $5\frac{1}{3}$ mm., and that of the left 6 mm.; when, however, the eye not under examination was covered up, the diameters increased to 6 mm. and $6\frac{2}{3}$ mm. respectively. As to the diseases in which inequality of pupils has been observed, Dr. Pasternatski quotes a number of cases mentioned by continental physicians; also one of aneurism shown by Professor Gairdner to the Edinburgh Medical Society; as well as two reported by Professor Finlayson in the *Lancet* of January 3, 1885, in both of which aneurisms were found at the necropsy. His own observations gave the percentage of cases in which inequality was found in various diseases as follows: Croupous pneumonia, 85; heart-diseases and aortic aneurisms, 61; pleurisy, 52; chronic catarrhal pneumonia, 38; acute articular rheumatism, 25; catarrh of the respiratory passages, 25; scurvy, 16; typhus, 16; recurrent typhus (relapsing fever), 15; abdominal typhus (enteric fever), 13. Inequality of pupils was also found in half the cases of catarrhal and hepatic jaundice and renal colic. The largest percentage occurred in croupous pneumonia, and study of the cases showed that the position and stage of development of the disease has a remarkable effect upon the pupils. At the very commencement the pupil on the same side as the affected lungs, as a rule, larger than the other. The difference generally increases with the lung inflammation, reaching its height on the third,

fourth, or fifth day; before the crisis the difference decreases, sometimes even disappearing. Afterwards, during the stage of resolution, a difference is again manifest, the pupil on the affected side being now contracted. Not only do the pupils in pneumonia differ in size, but also in sensibility to light. Speaking generally, the author's observations lead him to believe that inequality of pupils is most frequently met with in those internal diseases which not only affect the system generally, but which, like pneumonia, pleurisy, and hepatic and renal colic, are definitely localized as well. It is also very usual in heart-diseases and aneurism, but comparatively rare in scurvy and infectious diseases, such as typhus, and when it does occur in these it is generally consequent on some complication.—*Lancet*, January 15, 1887.

TEST-PAPERS FOR RECOGNIZING ALBUMEN.

These are two papers, one of which has been soaked in concentrated solution of citric acid, the other in solutio hydrarg. potassica, which is potass. iod., 3.32 parts; sublimate, 1.35 parts; acetic acid, 20 parts; aquæ destill., 40 parts.

The paper is dried and cut in slips.

Both papers are dipped into the suspected urine, which is shaken, the paper forming a thread in the test-tube. If albumen is present, cloudiness or a precipitate forms.

This test is very delicate, reacting with .001 per cent. of albumen.

It precipitates also uric acid, mucin, and alkaloids. Uric acid dissolves on the application of heat; alkaloids are dissolved by alcohol.—*Wiener Zeitschrift für Apotheker Vereins*, December 10, 1886.

GUACHACATA.

M. CRESCENCIO GARCIA proposes to substitute for quassia, gentian, quinine, etc., the flowers of a Mexican plant commonly called guachacata, and promises further information about the botany of the plant. Garcia prepares a bitter elixir by extracting first with alcohol and then with water and mixing the products; this is done because the plant contains two chief bitter principles, one soluble in alcohol, the other in water. The formula runs thus: guachacata flowers, 30 grammes; rectified spirits of wine, 300 grammes; sweet orange peel, 15 grammes. Macerate for a

week or a fortnight in sunlight; express; treat the residue with a little boiling water; express; mix the liquids.—*London Medical Record*, December 15, 1886.

PASTEUR'S INOCULATIONS IN RUSSIA.

PETERMANN, of Moscow, has established an inoculation station at Moscow in connection with the military hospital, and reports the following results: in three months 115 patients have been treated, of whom 87 were bitten by rabid dogs, 18 by rabid wolves, 5 by rabid horses, 4 by rabid cats, 1 by a rabid hog. As regards the portion of the body most exposed, 11 were bitten in the face, the remainder on the limbs and trunk. 55 were bitten in August, 31 in September, when apparently rabies is most common. The preparations of spinal cords used in inoculation varied from those which had been in course of development thirteen days to those which had been two days in preparing. Two of the 115 patients died, one who was inoculated fourteen days after the bite was received from a dog, and one who was bitten by a wolf, and inoculated eight days afterwards. The same method of treatment at Odessa was applied to 103 persons. In 36 cases the dog was probably rabid when the bite was inflicted; the others were doubtful on this point. The mortality was 7, greater than in Paris, but the virus used was weaker. Thirty to sixty-two days was the period of incubation in the fatal cases. The Society of Russian Physicians at St. Petersburg has given the matter much warm discussion, and an earnest effort is being made to test the accuracy of all reports and the genuineness of the rabies to which the patients are thought to have been exposed.—*Deutsche Medicinal Zeitung*, No. 96.

AN ANTIDOTE FOR ARSENIC AND ACONITE.

In a recent number of the *Indian Statesman* there appears a communication from SYED WALAYET ALI KHAN, of Patna, Benga, on a specific antidote for poisoning by arsenic and aconite. It is described as being the bark of the common goolar-tree, generally known to Europeans as the Indian fig. It is administered in doses of from 10 to 12 drachms, ground fine, and mixed with water. In severe cases it may be necessary to repeat it at short intervals three or four times, but it is said never to fail. It has been found success-

ful, according to the author of this statement, in every case in which it has been tried. We have consulted Dymock's "Vegetable Materia Medica of Western India," Waring's "Bibliotheca Therapeutica," and other works, but can find no reference to its use for this purpose. It seems strange that it should be an antidote both for arsenic and aconite, as these drugs do not produce the same symptoms, and are not allied physiologically. The matter requires further investigation, and we must admit that we are at present sceptical as to its value.—*Lancet*, January 15, 1887.

A VALUABLE METRIC TABLE.

The Popular Science News, in its recent issue, gives a table, unlike others of the kind, in giving the equivalents of both the common and metric system together, and is worth preserving for reference, as follows:

Length.		
Unit of measurement.	Approximate equivalent.	Accurate equivalent.
1 inch.....	$\frac{1}{2}$ cubic centimetres.....	2.539
1 centimetre ($\frac{1}{2}$ inch).....	0.4 inch.....	0.393
1 yard.....	1 metre.....	0.914
1 metre (39 37 inches).....	1 yard.....	1.093
1 foot.....	30 centimetres.....	30.479
1 kilometre (1000 metres).....	$\frac{1}{2}$ mile.....	0.621
1 mile.....	$\frac{1}{2}$ kilometres.....	1.609
Weight.		
1 gramme.....	$\frac{1}{15}$ grains.....	15.432
1 grain.....	0.064 gramme.....	0.064
1 kilogramme (1000 grammes).....	$\frac{1}{2}$ pounds, avoirdupois.....	2.204
1 pound, avoirdupois.....	$\frac{1}{2}$ kilogramme.....	0.453
1 ounce, avoirdupois (437 $\frac{1}{2}$ grains).....	28 $\frac{1}{2}$ grammes.....	28.349
1 ounce, troy or apothecary (480 grains).....	31 grammes.....	31.103
Bulk.		
1 cubic centimetre.....	0.06 cubic inch.....	0.061
1 cubic inch.....	16 $\frac{1}{2}$ cubic centimetres.....	16.386
1 litre (1000 cubic centimetres).....	1 U. S. standard quart.....	0.946
1 United States quart.....	1 litre.....	1.057
1 fluidounce.....	$\frac{1}{2}$ cubic centimetres.....	29.570
Surface.		
1 hectare (10,000 square metres).....	$\frac{1}{2}$ acres.....	2.471
1 acre.....	$\frac{1}{2}$ hectare.....	0.404

The calculation necessary to convert one system of measurements into the other is very simple. For example, suppose we are directed to use 175 grammes of chlorate of potassium, for making oxygen, how much is it in ounces? We see by the table that one ounce equals 31 grammes; divide 175 by this, and we have 5.6, the required number of ounces. If we wish to measure 53 cubic centimetres of any liquid, $53 \div 29.5$; the number of cubic centimetres in one fluid-ounce = 1.8 fluidounces, the required amount. Conversely, suppose we have a quantity of some chemical weighing three-quarters of a

pound, and wish to find the metric equivalent. As one pound is equal to .453 kilogramme, three-quarters of a pound will be equal to three-quarters of that weight, or .33975 of a kilogramme; or, as one kilogramme equals 1000 grammes, three-quarters of a pound will equal 339.75 grammes.

The approximate figures in the second column are sufficiently accurate for ordinary work, while those in the third column are correct to the third decimal place. The table was purposely made simple, and only those weights and only those measures are given which are in constant use. In this connection may be added a set of rules, which, if committed to memory, would render the conversion of one system of weights into the other very simple indeed.

1. To convert troy grains into centigrammes, multiply by 6.

2. To convert centigrammes into troy grains, divide by 6.

3. To convert troy grains into milligrammes, multiply by 60.

4. To convert milligrammes into troy grains, divide by 60.

5. To convert troy grains into grammes, or minims into fluidgrammes, divide by 15.

6. To convert grammes into grains, or fluidgrammes into minims, multiply by 15.

7. To convert drachms into grammes, or fluidrachms into fluidgrammes, multiply by 4.

8. To convert grammes into drachms, or fluidgrammes into fluidrachms, divide by 4.

Gr. i.....	.06 gramme.
ʒi.....	4.00 grammes.
℥i.....	30.00 grammes.

SUBLIMATE-GLYCERIN-GELATIN.

The *Zeitschrift für Apotheker Vereins* speaks of the success which has often occurred in veterinary practice with this combination, and describes its preparation as follows:

Common gelatin is treated with one per cent. sublimate solution twelve hours; the gelatin is then melted, and ten per cent. of glycerin added.

TOXIC EFFECTS OF ONE-ONE-HUNDREDTH OF A GRAIN OF SULPHATE OF DUBOISINE.

At a recent meeting of the Leeds and West Riding Medico-Chirurgical Society Dr. CHADWICK related a case where this amount of the drug, instilled for examination of a

senile cataract, produced a state of delirium lasting many hours, leaving the patient totally unconscious of what had occurred. There was great muscular weakness, and many strange actions were performed. It was suggested that the susceptibility to this drug reached its maximum in old age, and that the similarity between the symptoms and those of senile atrophy, popularly known as "softening of the brain," might suggest that its action was by causing spasm of the cerebral arterioles, and might indicate a possible liability to that form of pathological change. Dr. Major said the symptoms closely resembled those he had noticed in a medical friend, who took for experimental purposes a large dose of hyoscyamine, being characterized by strange antics, with curious unreasonableness. He attributed much of the effect to delusions of vision.—*The Lancet*, January 8, 1887.

WOOD-FIBRE AS A DRESSING.

DR. PORT, of the German army, recommends in the *Deutschen Militär-Artzlichen Zeitschrift* wood-fibres as an excellent base for dressings. This material is not only of an absorbing nature and free from germs, but possesses also greater elasticity than the cotton-fibres, and does not roll up when used. The elder-tree is most suitable for the purpose. The wood-fibres, before being used, are to be immersed into a solution of corrosive sublimate, expressed, wrapped up in mull, and then applied.

PILOCARPINE IN DATURA STRAMONIUM POISONING.

According to the Paris correspondent of the *British Medical Journal* (January 15, 1887), DR. ROTH (Nagy Bajour, Hungary) was summoned to a little girl aged 4, whom he found quite unconscious. The pupils were dilated, the face and the rest of the body were swollen as in dropsy, and covered with a rash resembling that of scarlatina. The little patient was uneasy and restless, and ground her teeth. Pulse 146, slight and weak; respirations 40; temperature 39° Cent. (102.2° Fahr.). Her bowels had not been opened, nor had she passed urine since the commencement of the attack. A local medical man had prescribed 15 centigrammes of antimony; but her father, who was a chemist, being persuaded that this would do no good, gave her a solution of sulphate of copper. She vom-

ited a large quantity of the fruit of the datura stramonium. Dr. Roth, remembering how Professor Purjeck had cured a case of atropine-poisoning by means of subcutaneous injections of pilocarpine, administered half a centigramme of that drug in twelve hours. This produced neither salivation nor perspiration, and there was no improvement. After a centigramme had been injected, however, the rash and the swelling began to subside. A quarter of an hour later another centigramme was injected, and the child's condition improved still more. The injections were continued, and at six o'clock the pupils had become almost normal. Pulse 120; temperature 39.7° Cent. (102.9° Fahr.). The patient spoke with ease, and said she felt hungry. An hour later, as there was still no perspiration, another half-centigramme was injected. Salivation and perspiration ensued, and rapid recovery followed. Altogether, five grammes and a half were administered. Dr. Roth considers that this dose was necessary to neutralize the poison.

NATHTHOL IN EXCESSIVE SWEATING OF EXTREMITIES AND THE AXILLA.

The *Journal de Médecine et de Chirurgie* recommends against excessive sweating of extremities or of the axillary region the following lotion :

Naphthol, 5 parts;
Glycerin, 10 parts;
Starch, 100 parts.

After having applied this lotion, the parts are to be dusted with the following powder :

Powdered naphthol, 2 parts;
Powdered starch, 100 parts.

In excessive sweating of the feet little cotton-balls saturated with the powder may be inserted between the toes.

AMMONIA APPLICATIONS IN MALIGNANT PUSTULE.

DR. LEONIDAS AVENDAÑO, of Peru, who has previously written (*vide The Lancet*, January 9, 1886) in favor of the local treatment of anthrax by ammonia, now publishes in a Lima medical journal an account of a recent case of undoubted malignant pustule in which he successfully adopted this treatment. The patient was a married woman, aged 34, who, two days after being stung by some insect in the forearm, began to experience the symp-

toms of acute inflammation in the spot. Thinking an ordinary boil was forming, she applied poultices. The next day, when seen by the writer, the pulse was 105, there was a great deal of oedema and redness about the arm, and there was a papule, which was blackish at the centre and surmounted with a circle of vesicles. The etiology, the rapid development, and the local symptoms all pointed to the malignant nature of the case. A crucial incision was made, and a brush saturated with the ordinary solution of ammonia applied to the cut surfaces. An acetate of ammonia and aconite mixture was ordered, and in a few days the patient was well. Dr. Avendaño thinks that other caustics which have been employed in anthrax—as nitric acid, chloride of antimony, and Vienna paste—only partially and incompletely destroy the bacillus anthracis, but that ammonia has a much more powerful effect. This makes the fifth case in which he has seen remarkably successful results follow its employment.—*The Lancet*, October 2, 1886.

BROMIDE OF ETHYL IN CONJUNCTION WITH CHLOROFORM.

At the meeting of the Baltimore Academy of Medicine held November 2, 1886, Dr. J. J. CHISHOLM stated that he has now employed the bromide of ethyl, in conjunction with chloroform, as an anæsthetic. His method is to anæsthetize the patient first with bromide of ethyl, and then to keep up the anæsthesia with chloroform. The advantage claimed by him for this method is that he accomplishes the desired result much more quickly than when chloroform is used alone.

TANGENA VENENIFERA.

Tangena venenifera, the ordeal-bean of Madagascar, has been made the subject of physiological experiment by QUINQUAUD. He finds that applied to frogs, the drug suspends voluntary motions, heightens the reflex excitability, and causes clonic and tonic convulsions. Later, symptoms of paralysis set in, though the excitability of the muscular apparatus and of the peripheral motor nerves remains intact at first, but ultimately the system appears as if affected by a curare poison. In dogs, vomiting, diarrhoea, and tenesmus precede the convulsions. The muscular power, however, remains normal until death ensues. Tangena fruit quickens the respiration, then slows it. The frequency of the pulse is increased for a

brief period, and then diminished; the blood-pressure is at first raised and then depressed, so that apparently the circulation and respiration are simultaneously affected, the action of the heart outlasting that of respiration. Quinquaud has given an extract of the seed in doses of 1 to $1\frac{1}{2}$ grains in various diseases, and has come to the conclusion that it can be used in paralytic affections of a toxic nature, atony of the intestines, and in tremor. In some cases of urinary incontinence, distinct improvement followed the use of the drug. The indications for suspension of the treatment are the presence of headache, vomiting, or a sensation of weakness.—*Provincial Medical Journal*, November 1, 1886.

A LIQUID VESICANT.

BIDET recommends the following: Cantharides is treated with chloroform in a distillation apparatus, so that the quantity of chloroform shall remain by redistillation a litre in the following mixture:

Cantharides, 1000 parts;
Chloroform, q. s.;
Wax, 125 parts.

—*Pharmaceutische Post*, October 30, 1886.

COLOMBINE.

M. Roux has observed the effect of pure colombine on fowls, the only animals which he has been able to get to take the medicine by way of the mouth. The symptoms produced by the ingestion of the poison were those that are associated with fatty degeneration of the liver and destruction of its working elements. Colombine irritates the intestinal tube, causing increased secretion from the gastric, intestinal, and biliary surfaces. The occurrence of these serious symptoms makes it necessary that the administration of the drug to human beings should always be in the form of small doses. The daily dose to commence with should not exceed one centigramme ($\frac{1}{100}$ gr.) of the alkaloid, and the powders of columba are to be preferred to the less certain alcoholic and ethereal liquid extracts.—*The Lancet*, October 2, 1886.

ANOTHER CORN CURE.

R Empl. adhæsivi, 1000 parts;
Ærugin. pulv., 80 parts;
Acidi carbol. par., 20 parts. M.
L. art.

—*Süddeutsche Apothek. Z.*

MOBILITY OF THE HEART.

DR. M. M. SHERSHEVSKI publishes in the *Vrach* a paper on the mobility or displaceability of the heart. The fact that the heart's position is liable to slight changes, according to the position of the body, has been recognized by Bamberger, Gerhardt, Luschka, and other observers, but they have none of them formulated the conditions under which it takes place. Dr. Shershevski gives details of the examination of forty persons, all of them free from cardiac and pulmonary affections, in whom he noted accurately the position of the heart's boundaries in the upright dorsal, left lateral, and right lateral positions. The chief mobility was towards the left side, but the heart was often quite perceptibly displaced to the right, as well as downwards and even backwards. The chief conditions under which this occurred were youth, nervous states, and freedom of the vessels from signs of sclerosis. Displacement backwards was found in nearly half the cases, and this shows that the heart ought to be examined in the upright posture. The writer specially remarks on this when the examination is made as a prelude to the administration of chloroform, whereas, as a rule, the stethoscope is applied when the patient is lying down and in a very agitated frame of mind, which latter condition always renders the organ more easily displaced; and the diminished diameter due to this may lead to erroneous conclusions if the measurements be not previously taken in an upright position. This has reference chiefly to young persons. In the case of subjects over sixty years of age, and of much younger persons whose arterial system had already begun to show signs of degeneration, there was little or no displacement produced in any position.—*The Lancet*, November 20, 1886.

CREASOTE IN CHOLERA MORBUS.

Spir. chloroform,
Tinct. opii,
Sp. camphoræ, aa fʒiss;
Creasot., gtt. iii;
Olei cinnam., gtt. vii;
Sp. vini gallici, fʒii. M.
S.—10 to 20 drops every five minutes.

—*Med. Record.*

In our last issue the residence of Dr. H. J. Boldt should have been given as 243 West Forty-second Street, New York, instead of 411 Sixth Street.

— THE — Therapeutic Gazette.

Whole Series,
Vol. XI.

Detroit, March 15, 1887.

Third Series,
Vol. III. No. 3.

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Original Communications.

THE NON-CONTAGIOUSNESS OF PULMONARY TUBERCULOSIS.*

By THOS. J. MAYS, M.D., PHILADELPHIA, PA.

WE are probably safe in asserting that the majority of the members of the medical profession are impressed with the belief that pulmonary consumption is a contagious disease. If this current opinion is true, it becomes one of the gravest questions, both in domestic and public hygiene, to define the proper relation between the consumptive pa-

tient and his surroundings. Therefore, fully appreciating the difficulties which envelop this problem, and holding the highest regard for the intelligent minds with whom we are compelled to take issue, we shall offer no other apology than the importance of the subject for making it the topic of this paper; with the express avowal, however, that this is not undertaken for the mere purpose of entering the arena of controversy, but from a conviction that the belief in the contagiousness of the disease is erroneous, and with a sincere desire to add something which, perchance, may be of value in placing this much-disputed question on a more solid basis than it has heretofore occupied.

Viewed from the broad stand-point of evo-

* Read before the Philadelphia County Medical Society February 23, 1887.

lution, as this question naturally must be, it will appear that all the infectious diseases are the result of a living union and interaction of unlike though not too highly specialized cells; or, to be more specific, these diseases are the products of grafting one cell on another,—a process identical with that of grafting practised in the vegetable world, and with skin-grafting frequently resorted to in the human subject,—and their intensity depends on the activity of the reproductive power with which these cells are endowed. This reproductiveness is common to every living cell in the animal body, but varies widely in different cells, being most active in those which are least differentiated, or, in other words, in those which retain the nearest approach to the original cell-type. In the lower stages of life all the cells in an organism are equally endowed with the power of reproduction, and any indifferent segment is capable of reproducing the whole animal. Thus, protozoa multiply by spontaneous fission, and the original organism resolves into a number of new individuals like the parent. But in the evolutionary changes of animal life the cells of some tissues undergo a greater modification than those of others, and those which diverge most from the original type become the least reproductive, while those which undergo no, or very little, change remain the most reproductive. In this higher stage of life the process of reproduction is carried on by a specialized tissue,—the ovary and testis,—the cells of which only retain the power of reproducing the whole animal, while in the cells of the other tissues, although they are still capable of reproducing themselves, this power is lost. The form-elements of the body consist of epithelial tissues, tissues of the connective substance, the muscular, and nervous tissues, and of all these the nervous tissue has the highest and the epithelial tissue the lowest organization. Gegenbaur says that epithelium represents both phylogenetically and ontogenetically the oldest and most primitive form of cellular tissue.

Now, reproduction itself is generally regarded as a very complicated process, and one for the performance of which highly specialized organs are considered essential; but on examination it will be found that both the sperm-cell and the germ-cell originate in the epithelial layer, which, as we have seen, is the simplest and most unspecialized tissue in the body. Hence, from a biological point of view, it is an extremely simple process. In relation to this subject Herbert Spencer

("Biology," vol. i. p. 220) says, "The organs for preparing sperm-cells and germ-cells have none of the specialty of structure which might be looked for did sperm-cells and germ-cells need endowing with properties essentially unlike those of all other organic agents. On the contrary, these reproductive centres proceed from tissues that are characterized by their low organization. In plants, for example, it is not appendages that have acquired considerable structure which produce the fructifying particles: these arise at the extremities of the axes, where the degree of structure is the least. The embryo-cells are formed in the undifferentiated part of the cambium layer; the pollen-grains are found at the little-differentiated extremities of the stamens, and both are homologous with simple epithelium-cells. Among many inferior animals, devoid of special reproductive organs, such as the *hydra*, the ova and spermatozoa originate in the layer of indifferent tissue that lies between the endoderm and the ectoderm,—that is, they consist of portions of the least specialized substance. And in the higher animals these same generative agents appear to be merely modified epithelium-cells,—cells not remarkable for their complexity of structure, but rather for their simplicity."

But this is not all that concerns us here; for, in accordance with a well-known physiological law, organic cells manifest an elective affinity for one another during the process of fertilization, which is weakest when the sperm-cell and the germ-cell possess too much sameness, and strongest when these cells originate from the same tissue in different individuals of the same species. This is well shown in the vegetable world. Nearly all plants are hermaphrodites,—that is, they are so situated that it is possible for the ovules of each flower to be fertilized by pollen from the same flower; yet practically this does not occur, for Mr. Darwin has demonstrated that either the ovules and pollen of the same plant do not ripen simultaneously, or that other obstacles arise which prevent fertilization in this direct way, and that the most vigorous vegetation is produced when fertilization takes place between different plants. The same law of cell affinity also exists in the highest organisms.

That which is of the greatest interest to us at present in these biological phenomena is (a) that the cells of every tissue in the animal body possess the power of reproducing themselves; (b) that the power of reproducing the whole individual is shared only by the cells of the epithelial tissue; and (c) that the process

of reproduction is most active between the slightly differentiated cells of the same tissue not in the same, but in different individuals. And we shall find that these deductions are as applicable to pathological as they are to physiological processes, for disease is propagated in the same manner as health is.

When under proper conditions a germ which has been modified by disease is grafted on a healthy germ, disease-germs will be produced, and the number of disease-germs thus produced will depend on the facility with which both germs reproduce themselves; and from what has been said it is evident that disease-germs will be most abundant when the epithelial tissues are involved, and least abundant when they originate in the nervous or muscular tissues, while those coming from the white or connective tissues occupy an intermediate position in this respect.

We have now arrived at a point where we are enabled to define the term contagion. Broadly, it may be stated that all infectious diseases are either contagious or inoculable, and that both of the latter terms represent processes which differ in degree only and not in kind. It is essential to both that their respective germs should find lodgment in the circulation before the disease is transmitted from one individual to another, and whether a germ is contagious or not depends on the facility with which it gains admission to and multiplies itself in the tissues for which it has an affinity; or, in other words, if a germ has the power of entering the circulation through the coverings of the body, it is a contagious germ; but when this is not the case, and it must be introduced by means of artificial force, then the germ is not contagious, but inoculable. Now, the facility with which a germ enters the blood is in a great measure owing to its reproductive activity outside of the blood. A germ which rapidly multiplies, and which disseminates a great number of contagious germs throughout the atmosphere, will expose the recipient body to a greater number of such germs in a given time, and hence will be more communicable than that germ which is devoid of these properties, or possesses them in a less degree. That the numerical element plays a very important part in the process of contagion and of inoculation is very evident from the examples which Darwin gives us in illustration of the analogous process of sexual genesis. He says,* "This view of the importance of

the quantity of formative matter seems probable from the following considerations: There is no reason to suspect that the spermatozoa or pollen-grains of the same individual animal or plant differ from each other; yet Quatrefages has shown in the case of the *Teredo*, as did formerly Prevost and Dumas with other animals, that more than one spermatozoon is requisite to fertilize an ovule. This has likewise been clearly proved by Newport, who adds the important fact, established by numerous experiments, that, when a very small number of spermatozoa are applied to the ova of Batrachians, they are only partially impregnated, and the embryo is never fully developed. The first step, however, towards development, namely, the partial segmentation of the yolk, does occur to a greater or less extent, but is never completed up to granulation. The rate of the segmentation is likewise determined by the number of the spermatozoa. With respect to plants, nearly the same results were obtained by Köreuter and Gartner. This last observer found that even thirty grains did not fertilize a single seed; but when forty grains were applied to the stigma, a few seeds of small size were formed. Naudin made the following interesting experiments: A flower was fertilized by three grains, and succeeded perfectly; twelve flowers were fertilized by two grains, and seventeen flowers by a single grain, and of these one flower alone in each lot perfected its seed, and it deserves especial notice that the plants produced by these two seeds never attained their proper dimensions, and bore flowers of remarkably small size."

Taking into consideration, then, what has been said concerning the fertility of the epithelial tissues and the comparative infertility of the other tissues, it will be obvious on *a priori* grounds that those diseases which are located in the former are contagious only, while those lodged in the latter are inoculable but not contagious; and we shall see with what remarkable uniformity this induction obtains among the infectious diseases when they are classified in accordance with this idea. Thus, the principal infectious diseases of the epithelial tissues are—

Smallpox,	} First group.
Cow-pox,	
Measles,	
Scarlatina,	
Diphtheria,	
Typhoid fever,	
Gonorrhœa,	
Erysipelas.	

* Animals and Plants under Domestication, vol. ii. pages 435 and 436.

Those of the connective tissues are—

Sarcoma,	} Second group.
Carcinoma, (?)	
Tubercle,	
Syphilis.	

It will be observed that the contagiousness of the first group of the infectious diseases as above given is directly related to the severity of the cutaneous eruption; and this is a practical confirmation of the above-made deduction that the degree of contagiousness is due to the number of contagium particles thrown off from the skin and diffused throughout the atmosphere. Smallpox produces the most extensive as well as the most intensive disturbance in the skin of any of the eruptive fevers, in all probability emits the greatest number of germs, and is admittedly the most contagious. Next in order of contagiousness comes measles, the cutaneous disturbance of which is no more marked than that of scarlatina; and yet it is said to be more contagious, because the eruption of measles is chiefly confined to the skin, while the most intense lesions of scarlatina are concentrated in the throat, from whence the contagium particles are less readily diffused than they are from the free external surface of the body. Then, again, it is a well-known fact that in many cases of measles the cuticle is cast off in a finer state of division than it is in scarlatina, and this of itself renders the epithelial germ of the former disease more diffusible. Owing to the violence of the process of diphtheria, this disease, although not accompanied by any well-defined skin-affection, ranks next to scarlatina in point of contagiousness.

In regard to the contagiousness of typhoid fever, in the sense in which the former term is used here, there can be but one opinion, but for the reason which has already been given, viz., that diseases of the internal surfaces are less contagious than those of the external surfaces, its contagious influence is rather limited. Occasionally, however, in cases where the dejecta are unduly exposed to a dry and warm atmosphere, or where they are confined in an improperly ventilated cess-pool, the contagium particles diffuse so rapidly in the first instance, and accumulate and enter dwellings through drainage-pipes in such quantities in the second, that they become an undoubted source of contagion.

Gonorrhœa is the only one of the infectious diseases of the epithelial tissues in the above list which is not contagious; due, undoubtedly, to the fact that only a small surface area is

involved, and that the lesion is confined to a tubal cavity with a narrow opening on the outside, all of which forbid a multiplication and dissemination of germs in sufficient quantity to give rise to the danger of infection through contagion.

Erysipelas is essentially a skin-disease, and, as a rule, is non-contagious. Generally it is limited to a comparatively small area, and hence is not so liable to contaminate the surrounding atmosphere, and so become contagious; yet when the disease involves a large extent of surface, and at the same time exists in an aggravated form, or becomes epidemic, it certainly throws off a sufficient number of gemmules to become contagious, as is well attested by many clinical facts.

From what has already been said it follows that the infectious diseases of the second group cannot be contagious, because they are principally located beneath the cutaneous and mucous surfaces of the body. It is well ascertained that, with the probable exception of carcinoma, all of them originate from or inhabit the connective tissue. Thus sarcoma and syphilis invade the subcutaneous, the sub-mucous, or subserous fibrous tissue, or the connective tissue of other organs; while tubercle infects the lymphatic system, which is but a modified form of the same tissue. There can be no doubt that the stroma of cancer is of connective-tissue origin, but whether its cells come from the same source, or are of epithelial origin, is a disputed point among our best histologists. This is immaterial so far as the question is here concerned, for these growths, like those of sarcoma, syphilis, and tubercle, are almost exclusively confined below the bodily surfaces, and hence have not sufficient communication with the atmosphere to become contagious. All these diseases are, however, infectious, for they have been communicated by means of inoculation. They all manifest a strong tendency towards auto-infection,—i.e., the original cells multiply and distribute their germs throughout the body by means of the blood and lymphatic circulation. In this manner sarcoma and carcinoma disseminate themselves and become very malignant in their course, the rapidity of the dissemination depending somewhat on the softness or succulency of the original growth. In the same way syphilis and tubercle are capable of contaminating the white or connective tissue of the principal organs of the body from one infectious centre.

Thus when the infectious diseases are

viewed from a biological stand-point we find that they naturally divide themselves into two classes,—viz., the contagious diseases, or those which are readily communicated; and the non-contagious or inoculable diseases, or those which are not readily communicated. If, in consonance with this idea, the same method of reasoning were carried further, it could also be shown that growths occurring in muscle and nerve, which are the most highly differentiated tissues in the body, possess no infectious or communicable property whatever; but we think that from this side of the question enough evidence has been brought forward to show that pulmonary tuberculosis both from its nature and relation is entirely devoid of contagion, and that it is no more communicable than cancer, syphilis, or any of the diseases with which it has the closest histological affinity.

After having said this much on the deductive side of the non-contagious nature of pulmonary tuberculosis, we will endeavor to ascertain the trend of the evidence on its inductive side. This evidence divides itself naturally into that which has been gleaned from experiment, and into that which has been derived from clinical experience. The first consists in inoculating and feeding animals with, and compelling them to inhale, tuberculous material; and the second consists in tracing the influence which tuberculous patients exert on their living surroundings through ordinary intercourse.

In regard to the experimental evidence, it may as a general rule be stated that artificial tuberculosis can be induced in the lower animals most readily by inoculation and least readily by feeding the poison, notwithstanding the facts that in numerous instances negative results are obtained by any method of introducing it; that many animals, like rabbits, guinea-pigs, etc., are more susceptible to its action than dogs, cats, etc.; and that it seems to be more communicable when introduced into the abdominal cavity than in the eyeball. The successful genesis of tubercle in this artificial way is, however, no more than one would be led to expect from a knowledge of its nature and of that of many kindred poisons, and is not the least evidence that they possess any contagious property; for abscess, gonorrhoea, malaria, etc., are communicated in the same manner, yet no one thinks of ascribing the power of contagion to these diseases.

While, then, there is no doubt as to the inoculability of pulmonary tubercle, it remains to be proven whether this disease is ever trans-

mitted between man and man, or between man and animals through atmospheric contagion. For obvious reasons clinical evidence is the only umpire to which we can appeal for a solution of this part of the question, and in order to bring this clearly into view we shall endeavor to compare the salient characteristics of those diseases, which are undoubtedly contagious, with those of pulmonary tuberculosis.

Exposure.—As a rule those who are most exposed to a contagious disease are most liable to it, while the opposite is true of pulmonary tuberculosis. Do the practitioners of medicine, and especially those who believe in the contagiousness of the disease, take the proper precautions against infection in this manner, or do their actions fail to confirm their professions? On this point Professor Lichtheim expressed himself in no uncertain tones before the Second Medical Congress of Germany, which met in Wiesbaden in 1883. Among other things he said that it must be admitted that there are many facts which contradict the contagious nature of pulmonary phthisis. Intercourse with consumptive people is not attended with danger. We hospital physicians spend much time among such people, and we have such confidence in the innocuousness of the disease that we do not hesitate to mix healthy persons with them in institutions devoted to its treatment, and we must confess that this procedure is practically unattended by any unfavorable results. He further stated that the mortality of the attendants in the principal hospitals for consumption was surprisingly low; and that he could, from investigation, confirm the belief that there is no relation between the increase of the number of phthisical patients at a health resort and the number of deaths from consumption occurring among the native inhabitants.

The statistics of the Brompton Hospital for Consumption in London, as collected by Drs. Williams and Humphreys, speak in the same emphatic manner against the contagiousness of pulmonary tuberculosis. This large institution shows that during a period of thirty-six years not a single clearly authenticated case of pulmonary consumption among all its attachés emanated from within its walls. During the thirty-six years there were twenty-nine physicians and assistant physicians connected with the hospital, and among these occurred a single case of phthisis, and he was tuberculous before he entered it. The rest were all well. Dr. Edwards was resident for

twenty-six years, yet he showed no sign of the disease. During that period there were employed one hundred and fifty clinical assistants. Of these eight died of consumption; but all, except one, were sufferers from the disease before they became connected with it, and in this one case there is doubt as to the origin of the trouble. Among the one hundred and one nurses, of which there is a health record, one is suffering from a slow form of the disease, which may have been contracted during her service at the hospital, although she is predisposed to consumption. She is an old employé, and able to attend to her duties efficiently most of her time. No more positive proof of the non-contagiousness of pulmonary phthisis could be gathered anywhere than is furnished by this large institution. Every one of the individuals associated with this hospital were almost constantly exposed to the disease, and still there is only a single case to which the least claim of contagion could be made, and this rests largely on suspicion.

These statistics in regard to the non-contagiousness of phthisis are strikingly confirmed by those which relate to the influence of the Consumption Hospital of Görbersdorf, in Germany, on the death-rate from phthisis among the inhabitants of that town. Dr. Brehmer, who has been in charge of that institution for twenty years,* says that since the year 1854 more than ten thousand consumptives resided in the Görbersdorf hospital, who walked the streets of the town daily and mingled with its inhabitants. The latter were, therefore, constantly respiring an atmosphere more or less laden with tubercle-bacilli emanating from the dried expectorations of these consumptive visitors; yet, in spite of these favorable conditions for contagion, the mortality statistics of the town show that prior to 1854 there were 10.07 annual deaths from consumption among its inhabitants, while from 1854 to 1880 there were only 5.0 deaths per year, or a death-rate somewhat less than one-half of what it was before the introduction of the hospital. These figures are especially interesting in view of the assertions frequently made that the healthful influence of mountain resorts is impaired by the infectiousness of the exhalations and expectorations coming from consumptive people who go there for the purpose of seeking relief, showing that such suspicions are more imaginary than well founded.

Then, again, it is common to find physicians, both in this country and in Europe, who are sufferers from consumption, and therefore compelled to spend most of their lives in the mountain resorts of their native countries, to labor hard among their many fellow-sufferers who constantly crowd these places, and yet they experience no inconvenience from their contact with these people, but, on the other hand, regain exceptionally good health.

Once more, not very long ago, Dr. J. Solis-Cohen, who has since become our honored President, said before this society that if any class of medical practitioners is more exposed to the virus of tubercle than another it is certainly the class to which he belongs, viz., the laryngologists. They are constantly operating on patients with tubercular ulceration of the throat, inhaling their breath and often their cough, and are continuously exposed to the evaporation of the sputum in the cuspadores of their offices, yet he was unaware of a solitary instance of infection brought about in this way.

Contagion between Husband and Wife.—In 1883 a committee, appointed by the British Medical Association, investigated the contagiousness of pulmonary phthisis by sending a printed circular asking the members of the profession throughout England whether they had observed any cases in which the disease was believed to have been communicated. The committee received ten hundred and seventy-eight answers. Of these, seven hundred and seventy-eight were negative, thirty-nine were doubtful, and two hundred and sixty-one were affirmative. Of the affirmative answers, one hundred and fifty-eight were cases where the communication of the disease was supposed to have taken place between husband and wife, or *vice versa*, eighty-one between members of the same family, and the remainder were principally cases between whom there was no blood connection.

On account of the large number of affirmative opinions, this report has been made to subserve the interests of those who believe in the contagiousness of phthisis. Evidently this is unfair, since the aim of the investigation was not to ascertain the number of absolutely well-demonstrated cases in which contagion was present or absent, for this would obviously have been next to an impossibility, but to collect the individual opinions of a large number of physicians as to whether they believed the disease contagious or not, and this resulted in seven hundred and seventy-

* Die Aetiologie der Chronischen Lungenschwindsucht, p. 18.

eight negative, and two hundred and sixty-one affirmative votes. Are we, therefore, justified in assuming that the two hundred and sixty-one opinions are of more weight than the seven hundred and seventy-eight negative ones, and thereby imply that the former only had the fortune or the misfortune to meet cases which originated through contagion, and that the latter had not? Is it not more probable that all of them witnessed cases around which hung a cloud of suspicion that they might be contagious, but that seven hundred and seventy-eight did not consider the proof strong enough to outweigh that which in their minds was in favor of other and more powerful influences in the production of the disease? Evidence of infection between married people is, we believe, much less common than it is generally believed to be. In our whole personal experience we can only recall a single instance where the wife may have contracted it in this way, although even in this case there is an incomplete family record, and the patient herself was a dress-maker and in all probability was predisposed to the disease. But were the fact of its communication established in any given case, it would still devolve upon the contagionists to prove that the virus was not introduced under very unusual conditions,—such as being inoculated through an abrasion of the skin or mucous membrane by intimate contact of one person with another.

As still further proof of the correctness of our view concerning the non-contagiousness of phthisis between husband and wife, we beg to call attention to a most admirable paper, entitled "Eine Statistische Studie als Beitrag zur Aetiologie der Lungenschwindsucht," contributed by Dr. Schnyder to Nos. 10, 11, and 12 of the *Correspondenzblatt für Schweizer Aerzte* for 1886. This contribution is based on three thousand four hundred and sixty-one cases of pulmonary phthisis, which were observed by its author while resident physician at the health resort of Weissenburg, in Germany. Of these cases, eight hundred and forty-four occurred among married people, but in four hundred and forty-five of them it was the husband only, and in three hundred and sixty-seven instances it was the wife only, while in thirty-two cases both husband and wife were affected. Now, it must be admitted by the most ardent contagionist that here existed the most favorable conditions for a propagation of the disease between husband and wife, or *vice versa*, through contagion; and the fact that eight hundred and twelve

of these cases escaped even a suspicion of contagion, shows clearly that the disease is not by any means readily communicated under extraordinary circumstances. But is it beyond doubt that the thirty-two cases originated through contagion? We think not, for, as Dr. Schnyder says, it is a notorious fact that, in spite of all entreaties and warnings, young people are often wedded while suffering from active lung-disease. He relates four such cases in his own experience in which both the bride and bridegroom came to Weissenburg, fresh from the matrimonial altar, to be treated for phthisis, from which they both suffered. But even letting those who are wedded while suffering from active phthisis out of the question, it cannot be denied that many young people of both sexes carry the hereditary taint of the disease in their constitution, which only awakes from its slumbering condition to assert its power when the many varied burdens and demands of family life begin to exhaust the vital resources.

Moreover, we have recently shown* that consumption makes its appearance in families which are perfectly free from all evidence of the disease. Proof based on two hundred cases of phthisis was there given, that the youngest members of families, provided either or both parents were the youngest members of their respective families, are especially predisposed to this disease. In view of this fact, it is of great importance to scrutinize the family record well before we jump at the conclusion that the disease must have been derived through contagion in the absence of a phthisical family history.

On the point of communicability between husband and wife, the late Dr. Flint, in his work "On Phthisis" (p. 420), says, "In my collection of cases (670), these five are all that I find in which there is room for the suspicion of the disease having been communicated from the husband to the wife, or the wife to the husband. By making inquiries of members of the medical profession, and searching periodicals, doubtless a considerable number of similar cases might be obtained. Collected in this way, however, they would not prove communicability. According to the law of chances, a disease of such frequent occurrence as phthisis would affect in succession a husband and wife, or *vice versa*, in a certain proportion of cases. Conceding

* "Some of the Causes of Pulmonary Consumption, viewed from a Darwinian Stand-point," *Medical News*, November 27, 1886.

that the histories of some of my cases are defective in information on this point, it is certain that the instances in which transmissibility may be suspected are not sufficient in number to be not allowed for as coincidences. It must, therefore, be concluded that the analysis of my cases does not furnish facts sufficient to render the communicability of phthisis probable."

Again, it is a well-known fact that phthisis may originate independently from a caseation centre located anywhere in the body outside of the lungs. Thus enlarged lymphatic glands of the neck, which so frequently follow dentition, or catarrhal affections of the mouth, may caseate at some inopportune time, and generate the specific virus which produces tubercle. Such glands are a standing menace to their possessor, and we have no doubt that they are the cause of at least some of the occult cases of tubercular phthisis. We have no doubt that pulmonary tuberculosis can arise from other infection centres in the body. Thus pyosalpinx, about which we have learned so much recently from Dr. Joseph Price, and from other members of this society, quite often goes on to caseation, and is said to be frequently accompanied, and probably followed, by tubercular involvement of the lung. How many such infection sources may originate spontaneously in the body as the legitimate product of ordinary catarrhal inflammation?

Infectiousness of the tubercle-bacilli, or tubercle-virus, diffused throughout the atmosphere.—In the deductive or biological part of this paper we have given sufficient reason to show that one of the essential requirements in a contagious disease is the property of contaminating the surrounding atmosphere with an abundant crop of disease-germs. We also endeavored to give proof from this standpoint of the question that this is true of smallpox, and of all the active diseases of the external surface of the body, and that it is not true of sarcoma, tubercle, syphilis, or of any of the internal diseases of the body. We shall now inquire whether this harmonizes with the inductive or experimental evidence which can be collected on this point.

Ever since it has been believed that the specific virus of tubercle resides in the bacilli, efforts have been repeatedly made to demonstrate the presence of these organisms in the atmosphere; and while it is claimed that they are always present, they have at no time been shown to exist in sufficient quantities to give rise to the danger of infection.

Baumgarten,* to whom belongs the credit of being a co-discoverer of the bacillus tuberculosis, and who implicitly believes that this organism is the causative agent of pulmonary phthisis, says that he never knew of a single well-established case of phthisis which was acquired through respiring an atmosphere vitiated by the exhalation of consumptive people. And he further says that during the last ten years he made and had made in the Pathological Institute at Königsberg a large number of inoculation experiments on rabbits with tuberculous material, constantly keeping inoculated animals in the same cage with the non-inoculated, the latter thus being exposed to an atmosphere infected with bacilli; yet in no single instance was the tubercular poison conveyed from the inoculated to the non-inoculated animal.

Referring to the work of the two Italian experimenters, Celli and Guarnieri, who undertook to decide whether and under what circumstances a tuberculous person is liable to infect the surrounding atmosphere, Baumgarten describes the three series of experiments which these scientists made. In the first series they placed three ventilating devices, the inner surfaces of which were well covered with Koch's culture gelatin, at different elevations in the chamber of a consumptive patient. The air of the room was strained through these instruments for twelve nights in succession. Part of the gelatin at the end of this time was examined microscopically, and part was inoculated into the eye, the peritoneal cavity, and into the subcutaneous connective tissue of rabbits and of guinea-pigs.

The second series consisted in allowing a number of phthisical patients to respire for a long time into a reservoir which was well coated with Koch's culture gelatin, after which the gelatin was examined microscopically and inoculated into the eye, peritoneal cavity, and subcutaneous connective tissue of rabbits and of guinea-pigs.

In the third series they experimented with air which was aspirated through tubes containing tubercular sputum. The sputum was evaporated by heat, and the air thus exposed was forced through a tube containing sterilized blood-serum and Koch's gelatin. The experiments were continued for many hours, and in many instances were repeated. The culture media were then tested in the same manner as in the two former series,—viz.,

* *Berliner Klinische Wochenschrift*, 1884, p. 626.

by microscopic examination and by inoculation.

Every one of these experiments was followed by negative results. In no case did the microscope reveal a bacillus, nor was tuberculosis produced in any of the animals which were inoculated. Bollinger repeated the work of these two investigators on a vast scale, and confirmed their results in every particular. Tappeiner also imprisoned two rabbits in a closed cage, and allowed a tuberculous patient to cough into the cage. At the end of two months the animals were found to be free from all taint of tubercle.

The results of these researches are all the more astonishing when the fact that in every instance the atmosphere was thoroughly exposed to the sources of tubercular contamination is taken in connection with the other fact that both rabbits and guinea-pigs are intensely susceptible to the tubercular poison. Surely the atmosphere here, if anywhere, must have contained tubercle-bacilli, and if not in number sufficient to produce infection, even when inoculated, how can infection possibly occur under ordinary atmospheric conditions?

Unequal Distribution.—The non-contagious nature of pulmonary tuberculosis is also strikingly manifested when it is compared in point of distribution with well-known contagious diseases. The invasion of a disease like smallpox, for example, implies an epidemic, and a rapid exhaustion of the soil on which it thrives, after which it quickly declines. Its death-rate, no matter how large or how small, is never constant, but rises to a maximum one year and falls to a minimum the next, and then nearly or entirely disappears for a number of years, only to reappear and to re-exhaust the soil which has matured during its absence. But pulmonary tuberculosis never becomes epidemic, and has no soil to exhaust through contagion, unless it is the soil of human life. Its death-rate is so uniform from year to year that it becomes dolefully monotonous. During the last four years of which we have a record the number of deaths in the city of Philadelphia were nearly the same for each year, being 2809 in 1882, 2798 in 1883, 2801 in 1884, and 2821 in 1885; while, on the other hand, there were 1336 deaths from smallpox in 1881, and only 3 in 1885. It is thus seen that the course of a contagious disease is erratic, and that of pulmonary tuberculosis is so constant that a knowledge of its past enables us to foretell its mortality in the near future.

Then, again, if pulmonary tuberculosis is contagious, why are we able to predict with a great degree of certainty that the badly-nourished; those who are overworked, confined in-doors with sedentary employment; those who are overcrowded, or exposed to dampness; those who belong to a heterogeneous population; those who spend long terms in prisons; those who have weak circulatory organs; or those who are the youngest members of numerous families, are, if other things are equal, most prone to die of it? Has ever a contagious disease been more fastidious in the selection of its victims?

Or, again, can contagion account for the fact, which Dr. Schnyder has so well shown in the article already quoted, that while in proportion to the male sex there are more females in German cities than in the country, yet 7.21 per cent. more females suffer from the disease in the country than in the city? Will any one be bold enough to pervert reason and say that the purer air of the country contains more bacilli or contagium germs than the city air? or will he, with Dr. Schnyder, believe that the greater liability of the females in the country is due to the fact that they are greatly more exposed to overwork and to all kinds of weather and temperature than their city sisters?

Quarantine.—If any further evidence were needed to prove that pulmonary tuberculosis is not spread by contagion, it could be found in the fact that the most rigorous quarantining and isolation of tuberculous patients has not the slightest influence in modifying the fatality of the disease, as is attested by the following history: In the year 1782* the authorities of the city of Naples decided that pulmonary tuberculosis was contagious, and logically enforced the most stringent preventive laws imaginable. Every practitioner of medicine was compelled to report every case of pulmonary phthisis immediately after discovery. Neglect of this duty exposed him to a fine of three hundred ducats, and the second offence was followed by imprisonment. Indigent patients were placed in a hospital at once. Their clothing and all their belongings were carefully isolated, and an accurate record kept of them. The punishment for non-compliance with this law was imprisonment. All furniture exposed to infection was ordered to be burned. After the patient's death or restoration his room was thoroughly renovated,—

* Uffermann, *Berlin. Klin. Wochenschrift*, 1883, No. 24; cited after Brehmer.

the floor, doors, and windows were taken out and burned, and new ones substituted. A heavy fine was imposed on those who bought or sold clothing which was exposed.

This law was in full force up to the year 1848,—for a period of sixty-six years,—and yet during that time there appears no evidence to show its practical usefulness; but, on the other hand, Dr. Rienzi says “that the injury which it inflicted on the city of Naples is simply indescribable.” Patients and their friends became objects of execration; houses in which a death occurred from the disease depreciated in value, and their owners became impoverished. A similar law existed in Portugal for many years, and was followed by like disastrous results.

In summing up the evidence which has been adduced in these pages, it appears from the first portion that nearly all the organic diseases of the human body are infectious, but that some, on account of the facility with which their germs multiply and diffuse through the atmosphere, are very readily communicated, while others, which possess these properties in a small degree only, are not readily communicated. The former we have called the contagious, and the latter the non-contagious diseases. Continuing this line of reasoning, we saw that pulmonary tuberculosis clearly belongs to the second or non-contagious class of diseases. In the second or clinical portion we found corroborative evidence of the first portion. Here the danger of exposure; the intimacy between husband and wife; the tubercle-bacilli, or the tubercular virus in the atmosphere; the distribution of the disease; the effects of quarantine; were all discussed in the light of contagion, and nothing was discovered to show the slightest danger of communicating this disease from one person to another under ordinary conditions.

In conclusion, we trust that altogether we have offered sufficient proof for believing that pulmonary tuberculosis is entirely due to influences other than those which are swayed by evil genii residing in the air; and hope that we have succeeded in allaying the morbid fear and the abomination with which consumptive people have recently come to be regarded by the medical profession, by their friends, and by all with whom they come in contact.

1716 CHESTNUT STREET.

CUNEIFORM OSTEOTOMY FOR ANTERIOR CURVATURE OF BOTH TIBIÆ AND BOTH FIBULÆ:

ILLUSTRATING THE GREAT PRACTICAL VALUE OF THE ELECTRO-OSTEOTOME AS A BONE-CUTTING INSTRUMENT, AND THE SPHENOMETER AS AN INSTRUMENT OF PRECISION IN BONE SURGERY—SUTURING OF THE BONES WITH KANGAROO TENDONS—HYDRONAPHTHOLIZED SURGICAL DRESSINGS—BRUCE'S BOW-LEG BRACE.*

BY MILTON JOSIAH ROBERTS, M.D.†

GENTLEMEN:—The patient whom I present to you to-day is a colored boy 4 years of age. He has been brought to this clinic from Newburgh-on-the-Hudson, a distance of some sixty miles. He is the youngest of a family of seven children, five of whom are living. He has a rachitic history. He was two and a half years old before he began to walk, and he has such an aggravated deformity that he has never been able to walk with any degree of comfort.

As I have not previously had an opportunity of getting a photograph of this patient, I have brought with me my camera, together with some dry plates, that I may make a pictorial record of his deformity. (The patient was at once placed in a sitting posture on a small table covered with a white sheet. The nurse stood at the farther side of the table, and held up a white sheet, which served as a background. Prof. Roberts quickly placed his camera in position, focused the image of the patient on the ground glass, put a plate-holder in position, and exposed one of the sensitized plates, occupying in all not more than a minute and a half of time. The negative was subsequently developed, and Fig. 1 was made from it.—REPORTER.)

I think it is of the greatest possible importance, in making records of examples of deformity, to have photographs which illustrate them. They give the best idea of the deformity in the shortest space of time, and as evidence of the existence and extent of a deformity will usually rank higher than almost any other form of record.

Now for the geometrical observations which

* A Clinical Lecture delivered at the New York Post-Graduate Medical School and Hospital, October 19, 1886.

† Professor of Orthopædic Surgery and Mechanical Therapeutics, Visiting Orthopædic Surgeon to the City Hospital on Randall's Island, Consulting Orthopædic Surgeon to the Woman's Hospital, Brooklyn, etc. Phonographically reported by J. J. Sullivan, M.D.

FIG. 1.



Negro, showing deformity.

should always be made in cases of this kind.* While a photograph representing the deformity is of great service in giving a general idea of the extent of aberration, it does not furnish us with all the desired information, and, even if it did, the expense of reproducing photographs in the form of cuts is so great that it cannot always be borne by those who have cases to report. It is desirable, therefore, to have an additional record of the degree of deformity, which record shall be in terms that are intelligible to those who may seek information from its perusal. To this end it is necessary to employ an instrument of precision. The instrument which, in my judgment, is best adapted to determine the extent of aberration in degrees, in examples of deformity of this kind, is a protractor, which I have had constructed for this special purpose. This protractor (Fig. 2) is furnished with two sets of graduations, and three series of figures marked on the face of the semicircle. Both arms of the instrument are made adjustable. One of these arms slides in a groove, which passes through the base of the graduated semi-

circle. In using the instrument this arm is placed so as to correspond to what should be the normal plane of that part of the body which is the subject of observation. The other arm is secured in a revolving head-piece, so that one of its edges corresponds to or passes through the centre of the base of the graduated semicircle. This arm can be rotated so as to correspond with the plane of the deformity, and the number of degrees of aberration is then read off from the graduated circle. Proceeding to measure the deformity in this case, in the manner I have described, we find the extent of the anterior curvature of the bones of the right leg is forty-five degrees, and of the left leg forty-three degrees. A little farther on you will see that these observations not only serve as a useful record of the extent of deformity, but will be indispensable to the employment of another mathematical instrument to be used in determining the dimensions of the base of the wedges to be removed to correct the anterior deformity of the tibiae and fibulae.

The bone-cutting instrument which I will use in performing the operation for the correction of this deformity is one that has been devised and elaborated by myself, and which I have called the electro-osteotome.† (See

* "Anatomical Geometry and Toponymy. An Introduction to the Scientific Study of Deformities, with a Description of New Mathematical Instruments." Read before the Medical Society of the State of New York, February 3, 1885; *The Medical Record*, February 21, 1885.

† "Description and Practical Demonstration of the Working of Roberts's Improved Electro-Osteotome, New

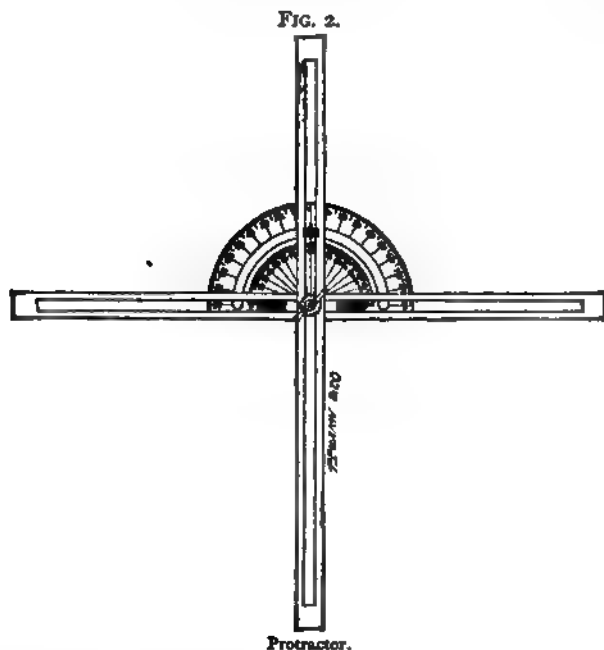


Fig. 3.) It has been designed with special reference to the rapid and accurate cutting

be seen as we proceed with the operation to-day, we have an instrument which at once

FIG. 3.



Electro-Osteotome.

of bone. When I began some years ago to perform operations in bone surgery, I found

Electrical Illuminating Apparatus, and a New Form of Portable Storage-Battery." Communicated to the New York Academy of Medicine, February 19, 1885; published in the *New York Medical Monthly* for October, 1886.

that we were not as well provided with means for cutting bone as we should be. In order to operate satisfactorily upon bones, it seemed to me that we should be able to cut them with as much ease and accuracy as we cut the soft parts with a sharp scalpel. The chisel, which, for the most part, has been the bone-cutting instrument heretofore employed by surgeons in their conservative operations, does not fulfil these indications. In the electro-osteotome, however, as will

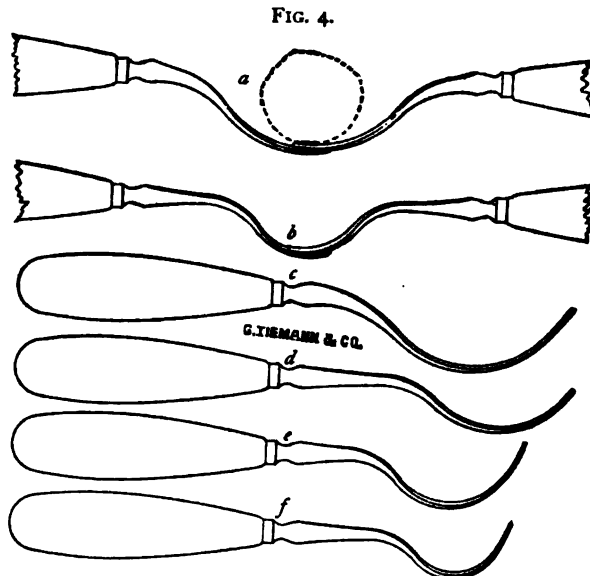
places the surgeon in full command of the situation, and enables him to promptly meet all indications. I have now performed a large number of operations with the electro-osteotome, and am thoroughly convinced that it is far superior to any other instrument in existence for performing the varied opera-

tions in bone surgery. The instrument which I will use on the present occasion is a new one, and has some improvements over the old one which I have been using for a number of months. As this is the first time I have had occasion to use it since it came from the shop, I hope you will make allowance for any delay that may arise in consequence.

The patient having now been anæsthetized, and his lower extremities thoroughly cleansed, first by the use of soap and water, and subsequently by rinsing in a solution of corrosive sublimate (1 to 1000), a carbolized Esmarch's bandage is tightly applied, beginning at the toes and carrying it up the limb to the upper part of the thigh, where it is made fast. Re-

at *a* and *b* are in pairs, while those at *c*, *d*, *e*, and *f* are single, and are provided with much longer blades, which are curved up so as to serve the same purpose as a pair of retractors with shorter curves. The single retractors are much more difficult of introduction on account of the increased length of curvature. These retractors are placed in position by passing them in around the bone, between it and the soft parts, so that when they are in position the bone lies directly upon them and the soft parts are behind them. In this way the soft parts are absolutely protected from all danger of being cut while using the circular saw of the electro-osteotome.

The bone being thus exposed, its exact diameter at the site of operation is readily de-



Form of protecting retractors.

moving the lower part of the bandage, we have a bloodless limb upon which to operate.

The first step in the operation is to make a longitudinal incision down to the bone along the anterior aspect of the tibia over the site of the greatest deformity. Care should be taken in making this incision not to carry the knife through the periosteum, thus injuring it unnecessarily. Having made a clean-cut incision down to the bone, the soft parts on either side of the incision are picked up with a pair of dressing forceps, and the cellular tissue between them and the bone is divided with a scalpel, so as to admit, without the use of undue force, the end of the protecting retractor which is placed between the soft parts and the bone.

The forms of protecting retractors used for this purpose are illustrated in Fig. 4. Those

terminated by means of a pair of calipers. The diameter of the right tibia we ascertain to be in the present instance twenty-four millimetres.

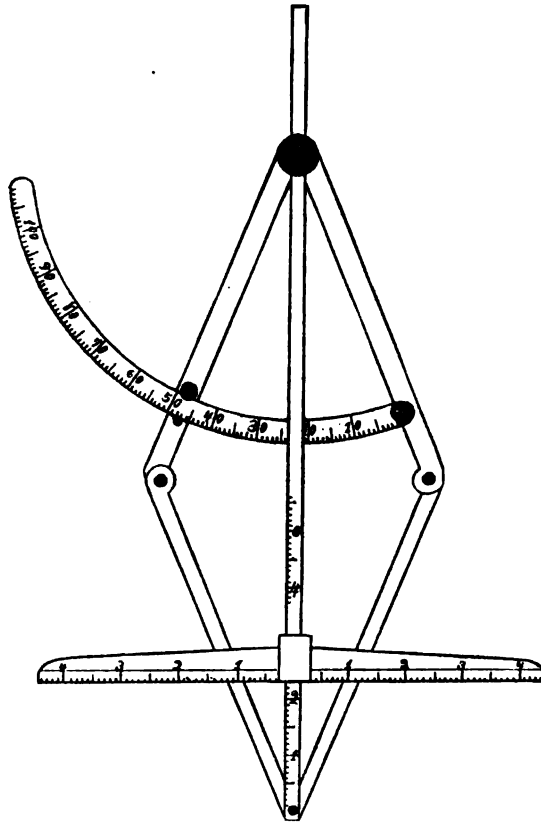
The next step is to determine the exact dimensions of the base of the wedge of bone to be removed in order to correct this deformity. For this special purpose I have invented a mathematical instrument* (Fig. 5), which, given the degree of deformity to be corrected and the diameter of the deformed bone, will automatically calculate the dimensions in millimetres of the base of the wedge of bone to be removed to exactly correct the deformity, thus saving a somewhat elaborate trigonometrical calculation. This instrument—the

* "The Sphenometer; a New Instrument of Precision in Bone Surgery;" *New York Medical Journal*, November 20, 1886.

sphenometer—is used as follows: The lateral shafts, all four of which are of the same length, are set so as to enclose the angle of deformity. We have already determined in the present case that the angle of deformity is forty-five degrees, therefore we move the instrument so that the inner edge of the lateral shaft over which the graduated arc passes coincides with the line indicating forty-five degrees on the arc. (See Fig. 5.) Thus set, the lateral arms of the instrument enclose an angle equal to the degree of deformity. It

diameters of bone and corresponding increasing dimensions of base of wedge.) We have determined the diameter of the right tibia in the present instance to be twenty-four millimetres. Upon the central arm of the sphenometer, which is graduated in millimetres, a straight bar, also graduated in millimetres from its middle towards either end, is made to slide at right angles to it. This graduated bar, at right angles to the central shaft, is moved along until the diameter of the bone at the site of operation has been

FIG. 5.



Sphenometer.

will be understood, from an examination of the diagram (Fig. 6) that the sides of the wedge-shaped piece of bone to be removed to correct this deformity, indicated by dotted lines *c*, *x*, *d*, must be inclined to each other, so as to enclose an angle of equal extent to that of the deformity, *d*, *a*, *b*, to be corrected, viz., forty-five degrees. Having set the instrument so that its lateral shafts enclose the angle of aberration, it can readily be seen that the dimensions of the base of the wedge depend entirely upon the diameter of the bone at the site of the operation. (See Fig. 6, in which *j*, *k*, *h*, *i*, and *f*, *g* represent varying

measured off on the central arm of the sphenometer. (See Fig. 5.) Having done this, we can now read off from the graduated bar, which passes over the lateral limbs of the instrument, the dimensions in millimetres of the base of the wedge of bone necessary to be removed in order to correct the deformity. It will be seen by reference to Fig. 5 that the straight movable bar is graduated both ways from its middle, and therefore it is necessary, when reading off the dimensions of the base of the wedge, to count the graduations included between the lateral shafts of the instrument on both sides of the central shaft. The base of

the wedge we find in the present instance to be eighteen millimetres. (See Fig. 5, nine millimetres being indicated on either side of the central shaft of the sphenometer.) Eighteen millimetres are, therefore, marked off on the convex surface of the bone. Selecting an imaginary point on the opposite side of the bone, midway between the millimetre markings on the convex side, I take the electro-osteotome in hand, close the circuit, and cut obliquely through the bone to the imaginary point on the opposite side, such division of

we will proceed to do for the fibula what has already been done for the tibia. Instead of endeavoring to get at the fibula through the opening which I have already made, I will make a separate opening upon the external aspect of the limb through which to reach the fibula and cut down to it. Placing the protecting retractors in position, the bone is brought into full view, as already described. By the use of the bone calipers I can now readily measure the diameter of the bone. This I find to be ten millimetres. With the

FIG. 6.

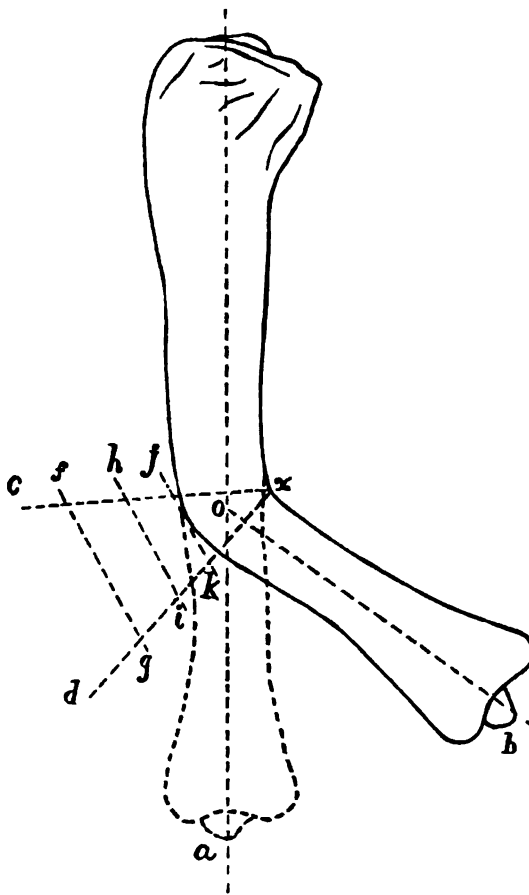


Diagram of tibia, showing wedge to be removed.

the bone requiring, as you observe, only about two seconds. The second oblique section of the bone is begun eighteen millimetres away from the first on the convex side of the bone, and the direction of the cut is such as to reach the opposite side of the bone at the same point as in the first section. Removing this wedge and coaptating the two cut ends of bone, it will be found that the deformity has been completely and perfectly reduced. But the cut ends of this divided tibia cannot be coaptated until we have removed a small wedge of bone from the fibula. Therefore

sphenometer set at the angle of aberration, viz., forty-five degrees, I move the graduated bar, passing over the lateral shafts of the sphenometer along until ten millimetres have been measured off. I can now see at a glance that the base of the wedge to be removed from the fibula measures nine millimetres. I proceed, therefore, to cut out this wedge by means of the electro-osteotome in the same manner that I did for the tibia.

These wedges of bone having been now removed from the tibia and fibula, and the distal end of the limb so placed as to coaptate

the cut ends of bone, you see that the anterior deformity has been completely and accurately corrected. There has been no undue force used, no jarring, pulling, tearing, or laceration of tissue, such as is incident to the use of the chisel and mallet. No undue manipulation or force is required to bring the limb into line when the proper-sized wedges of bone have been removed. If any of you, gentlemen, have ever been present at an operation for the correction of a deformity of this kind, where the chisel has been used as the bone-cutting instrument, you cannot have failed to have noticed the great muscular exertion sometimes necessary on the part of the surgeon to get the limb into line after he has ceased to use the chisel. The reason of this is that the bone is, as a rule, only partially divided by the chisel. The remaining portion is then broken off by manual force, and the limb carried, if possible, slightly beyond the point necessary to correct the deformity, and

move the Esmarch's bandage as before. We are now ready to again direct our attention to the right limb. Sufficient time has elapsed since the removal of the Esmarch's bandage from the right thigh to permit the blood-vessels and capillaries to regain their former tonicity, so that no annoyance from oozing of blood need be apprehended. I shall, therefore, remove the bandage which has secured the sponges in place, and proceed to pass a suture through the divided ends of the bones, so as to hold them in perfect coaptation during the healing process. To this end I replace the circular-saw head-piece of the osteotome with that designed for the carrying of drills. Introducing a fine drill, I make the necessary drill-holes in the bones, one at each end, for the purpose of passing the sutures through. Instead of drilling through the bone at right angles to its long axis, I am in the habit of commencing about half an inch from the margin of the cut on the convex aspect of

FIG. 7.

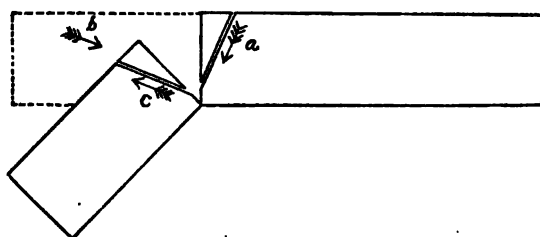


Diagram showing position of drill-holes and direction of passing sutures through the bones.

the dressing applied. No such clean-cut or complete section of the bone as the electro-osteotome makes is made, and no instrument of precision serves to guide the surgeon in his manoeuvres. It is my belief that by such or similar means as you have seen me use to-day, bone surgery, so far as the correction of angular deformity is concerned, is capable of being practised as an exact science, thus doing away at once with all guess-work. Placing antiseptic sponges over the site of these incisions, and securing them in place by a firmly-applied roller-bandage, the Esmarch's bandage is removed from the upper part of the thigh, and the blood again permitted to flow through the limb.

Leaving the right limb for the present thus bandaged, we will proceed to operate in precisely the same manner upon the bones of the left leg. Having completed the removal of the wedges of bone from the tibia and fibula of the left limb, we place carbolyzed sponges over the sites of the incisions, secure them in place by means of a roller-bandage, and re-

move the bone, and inclining the drill at such an angle as will permit it to emerge on the cut end of the bone, nearly on the opposite side, as indicated by the arrow *a*, Fig. 7.

To retain the cut ends of the bone in coaptation, I am in the habit of using absorbable sutures instead of wire. After the dressing is applied, which, of course, is a permanent one, the sutures are absorbed, and the union of bone goes on uninterruptedly. Of late I have been making use of tendons from the tail of the Australian kangaroo, kindly forwarded to me for trial by Mr. A. E. Beach, of the *Scientific American*, who received them direct from Australia. These tendons are exceedingly strong, and are not as readily absorbed as the ordinary catgut sutures, remaining intact for a period of from eight to ten or more days without artificial preparation. I have forwarded some of them to Mr. Geo. J. Seabury, manufacturer of surgical dressings, and he informs me that in strength they are superior to any substance he has ever seen used for absorbable sutures.

I have also written to Australia for a fresh supply, and hope ere long that these tendons, properly prepared and assorted, will be placed upon the market, as I believe them to be of great practical service where a strong absorbable suture is required. In the introduction of these sutures I make use of an instrument of the form illustrated in Fig. 8. To intro-

are held in complete apposition. This we have already done by means of sutures of kangaroo tendons. It is intended that the dressings which are applied shall not be removed until four to six weeks have elapsed. Unless I can make arrangements so that the patient can be retained here in the hospital, the mother will, with my permission, take this

FIG. 8.



Instrument introducing sutures.

duce the suture, it is laid in the fork at the end of the instrument, and shoved down through the drill-hole, as indicated by the arrow *a*, Fig. 7, and out into the space left by the removal of the wedge-shaped piece of bone. Withdrawing the instrument, the suture is left in position. By means of the side hook near the end of the instrument the suture is picked up and drawn through as far as desired, when it is again released. The instrument is now passed down through the drill-hole in the other cut end of the bone, as indicated by the arrow *b*. It is pushed out through the lower opening, and the suture engaged by means of the hook. The instrument is then withdrawn, as indicated by the arrow *c*, and with it the suture. The cut ends of the bone are now placed in apposition, as indicated by the dotted lines, Fig. 7, and secured by tying the suture.

Having now secured the divided ends of the tibia and fibula in apposition by kangaroo tendons, the incisions through the soft parts are closed by means of a continuous suture of the same material. For a long time I was in the habit of applying the permanent dressings in operations like this without suturing the bones, and have had most excellent results from this practice. I have never had a single example of non-union, and in only one instance was there delayed union. Extraordinary care, however, is necessary in applying the permanent dressings, without suturing the bones, to keep their cut ends in apposition. By using absorbable material instead of wire to hold the ends of bones together sutures cease to be objectionable, while at the same time absolute certainty of apposition of bone is secured.

Now as to the dressing of these cases. This is a matter of considerable importance; in fact, a chief feature in the successful issue of such operations. The first essential condition is to be certain that the cut ends of bone

child to Newburgh this evening. So you see we have some confidence in the method adopted in the treatment of these cases.

Plaster of Paris, silicate of sodium, and other substances may, in conjunction with strips of cloth, be used in making retentive splints for cases of this class. Wire gauze may also be used. Gutta-percha is the material, however, which I prefer above all others for this purpose. When made pliable by being dipped in hot water it can be perfectly moulded to any part of the body, and when set never becomes soft by discharges from wounds or other sources. It has the advantage over plaster of Paris in being a cleanly dressing to apply, not soiling the hands or clothes. It is made in sheets of varying thicknesses. One of a quarter of an inch in thickness will be used on the present occasion. Holes should be punched in the sheets before they are cut up for use, so as to permit of the evaporation of the insensible perspiration from that part of the body to which it is applied. This may be done by ruling the surface of the sheet both ways, with lines about two inches apart, which cross each other at right angles, and punching holes with a punch at the intersection of these lines. Thus prepared, the gutta-percha is dipped into boiling water, or water heated to very nearly the boiling-point, and when thoroughly softened it is applied to the limb, which is held in position until the gutta-percha sets. As the gutta-percha begins to set very soon after it is removed from the hot water, it is of course essential to apply it as quickly as possible. It is of great advantage also to have the help of an assistant who is thoroughly familiar with the manipulation of gutta-percha and the various steps of the operation. It should be secured in position by means of a roller-bandage carried about it and the limbs. While still soft, any parts of the splint which project unduly may be readily trimmed off with a pair of scissors.

But, before the gutta-percha splint is applied, it is desirable to put some form of antiseptic dressing about the limb at the site of operation. In the past I have made use of carbolic acid, iodoform, and corrosive sublimate gauze. More recently I have been using hydronaphthol, which is a new antiseptic, and was introduced to the profession, I believe, by Dr. George R. Fowler.* I have been using it now for some time, and am very well pleased with it indeed. In fact, I may say I am quite of the opinion that it has a

form and corrosive sublimate dressings are frequently reported in our medical journals. If, therefore, we have in hydronaphthol, as it appears, thus far, from all reliable sources of information, a non-poisonous and non-irritant antiseptic, it will meet with a hearty welcome from a large number of surgeons. It is used in the same strength solutions as corrosive sublimate.

Along the line of incision hydronaphthol in the form of powder is sprinkled. It may be mixed with equal parts of fuller's earth, if

FIG. 9.



Patient with limb dressed.

very brilliant future. The advantages claimed for hydronaphthol are its efficiency as an antiseptic and an antiputrefactive agent. It belongs to the phenol series. Though irritating to mucous membranes, it is a non-irritant to wounds. It is non-poisonous and non-corrosive, and on this account is far safer than carbolic acid used in strong solutions. It has been demonstrated that carbolic acid, in weak solutions at least, is a very unreliable antiseptic. Cases of poisoning from the use of iodo-

thought desirable, and used upon closed wounds in the same manner as iodoform. Over this a pad of six or eight thicknesses of hydronaphthol gauze is placed, and secured in position with a roller-bandage of hydronaphthol gauze carried about the limb.

Thus prepared, the limb is ready to be placed in the retentive splint of gutta-percha. When the gutta-percha splints have been applied in the manner already described, and secured in position by roller-bandage, our patient is ready for transportation. (See Fig. 9.) Usually patients thus operated upon and thus dressed will recover without an un-

* *Vide The New York Medical Journal*, October 3, 10, 24, and December 5, 1885.

toward symptom. They should, however, be carefully watched, the temperature being taken twice or three times daily. If there is a rise in temperature above 101° , which cannot be traced to any outside source of irritation, the wound should be examined at once. In very young children the greatest possible care is essential in keeping the dressings perfectly dry. The patient should be placed in bed, and the legs inclined at an angle of about forty-five degrees from the surface upon which he is lying. Kept in this position, the dressings are not likely to become soiled by urine or other excreta.

(To be continued.)

ANTIFEBRIN.

BY WILLIAM OSLER, M.D.*

A FEW months ago Drs. Cahn and Hepp announced from Kussmaul's clinic the discovery of a new antipyretic, which they named antifebrin. A full account of their observations has more recently appeared in the *Berliner Klinische Wochenschrift*, Nos. 1 and 2, 1887.

The drug is known chemically as phenylacetamide or acetanilide ($C_6H_5C_6H_4OHN$), and is formed by the action of heat upon aniline acetate. It is a neutral body, and in this respect it differs from all other antipyretics, which are either phenols, like salicylic acid and resorcin, or bases of the chinoline series, as thallin, antipyrin, and quinine. It is a white crystalline powder, insoluble in cold water, but readily dissolving in hot water or alcoholic solutions. The taste is not unpleasant. The dose is from 8 to 12 grains. In larger amounts it is not poisonous, though it is advisable not to exceed 30 grains in the day. Usually 8 grains will be found an effective dose. It is conveniently given in spirit and water, or in whiskey, or, for children, in warm sweetened water.

During the past three months I have used it in my wards at the Philadelphia Hospital and at the Hospital of the University of Pennsylvania in the following 29 cases: typhoid fever, 7; pneumonia, 6; phthisis, 8; erysipelas, 4; pleurisy, 1; peritonitis, 1; rheumatism, 1; intermittent fever, 1. As a rule, 8 grains were given when the temperature rose above $103\frac{1}{2}^{\circ}$, and hourly observa-

tions were made for six or eight hours. In several cases of phthisis 4 grains were given four or five times a day. The maximum amount given in one day was 32 grains (Case II.). For brevity, the effects of the drug may be noted under the following heads:

1. *Reduction of Temperature.*—This is the most marked and characteristic action, beginning usually within an hour. In eighteen administrations the fall was over 2° in this time; in three instances a fall of 3° , on two occasions a fall of 4° . In thirteen instances the temperature was reduced 4° in two hours, in sixteen administrations 3° , and on four occasions 5° . The greatest drop within this time was in Case XXIV., in which the fall was $6\frac{1}{2}^{\circ}$. The greatest reduction was in the following: Case I., 8° in five hours; Case X., $6\frac{1}{2}^{\circ}$ in five and a half hours; Case XVIII., $7\frac{1}{2}^{\circ}$ in two and a half hours; Case XX., 7° in seven hours; Case XIX., $7\frac{1}{2}^{\circ}$ in ten hours.

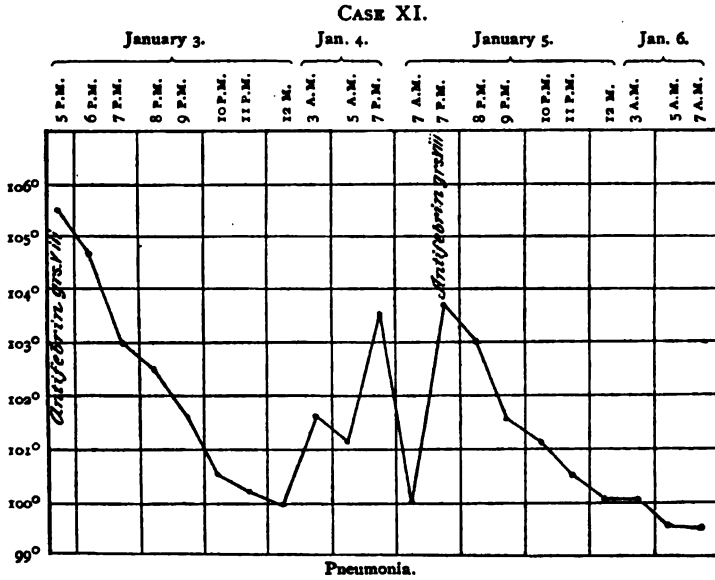
In seven administrations the temperature was unaffected by the eight grains. Cases VII. and XIII., both of pneumonia; Case XXIII., peritonitis; and Cases IX. and XVIII., erysipelas.

The duration of the reduction was variable, usually from three to six hours. The following cases illustrate well the antipyretic action of this drug:

CASE XI. (Chart I.).—Man, aged 32, admitted to the drunkards' ward of the Philadelphia Hospital. A few days after admission he was noticed to be a little short of breath, and, on examination of the lungs, there was dulness, with râles and feeble blowing breathing at the right base. On January 3, at 5 P.M., the temperature was $105\frac{1}{2}^{\circ}$. Antifebrin, gr. viii, was given, and the fever gradually fell, as the chart shows, until midnight, reaching 100° . By 3 A.M. it had risen to $101\frac{1}{2}^{\circ}$. At 7 P.M. on the 5th the temperature was nearly 104° , and another dose of the antifebrin was given with good effect.

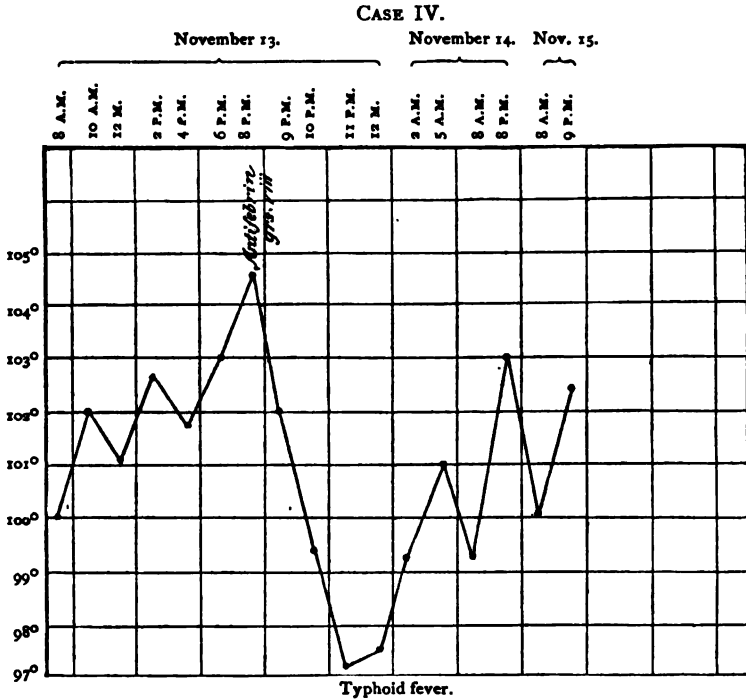
CASE IV. (Chart II.).—Rachel C., aged 21, admitted November 3 with typhoid fever. On the 4th the temperature was 104° , but from this date until the 13th it did not rise above 103° . At 8 P.M. on the 13th the temperature was $104\frac{1}{2}^{\circ}$. Antifebrin, gr. viii, was given. By ten o'clock there was a fall of 5° , with profuse sweating. At 11 P.M. the temperature was 97° . At 12 A.M. it began to rise, and by 2 A.M. was 99.4° . Between eleven and twelve o'clock she complained of slight chilliness, but the general condition was good, and there was no collapse. The thermometer did not again register above $103\frac{1}{2}^{\circ}$ in her case.

* Professor of Clinical Medicine in the University of Pennsylvania.



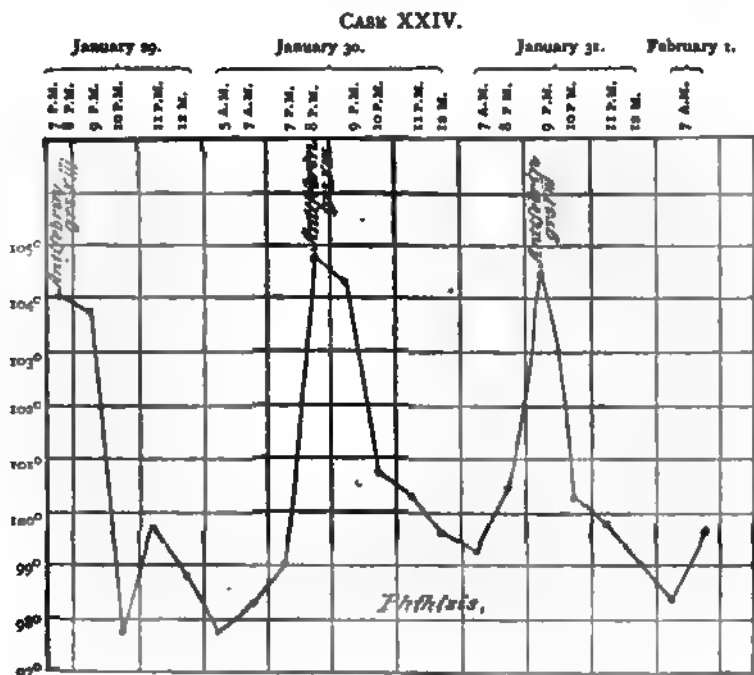
CASE X. (Chart III.).—J. B., aged 35, with chronic phthisis and high fever. The chart shows how rapidly the antifebrin in three successive days reduced the temperature from 4° to 7° in from two to three hours.

above 103°, and a second dose of antipyrin was given. At 5 P.M., quinine, gr. xx. He had had also quinine, gr. v, every four hours. At 8 P.M. the temperature had fallen to 100½°, at 11 P.M. to 99°, and at 3 A.M. to 98°. On



CASE XVIII. (Chart IV.).—F. H., aged 31, was trephined for mastoid disease in Philadelphia Hospital January 15. On the 20th he was attacked with erysipelas. On the 23d, at 10 A.M., the temperature was 106½°; at 11, 105½°. He was given antipyrin, gr. xv, and quinine, gr. xx. At 3 P.M. the temperature was still

the 24th the fever was again 105°, and antipyrin and quinine were given, with a reduction of 4° in five hours. On the 25th antipyrin and quinine were twice given, without any effect. He was transferred to the medical ward, and the antifebrin was used as shown by the chart. The last dose caused a



fall of $7\frac{1}{2}^{\circ}$ in two and a half hours. The patient subsequently did well. The chart is of interest, as it affords a comparison between the action of antipyrin with quinine, and that of antifebrin.

In several cases the dose of gr. viii did not seem sufficient. In seven administrations little or no effect followed. This was particularly noticeable in the pneumonia cases. In Case XIII., with almost complete involvement of the right lung and affection of the left base, the temperature from the 5th to the 10th ranged from 102° to 105° . Antifebrin was given six times, thrice without effect, and on three occasions it only reduced the fever a degree or a degree and a half. Thallin, gr. iv, twice brought the temperature down 3° and 4° ; but the most effective agent in this case seemed to be the cold pack, which reduced the temperature from 105° to $98\frac{1}{2}^{\circ}$. This patient had delayed resolution, and the fever did not subside until the thirty-ninth day from the initial chill. In other instances, a second dose repeated an hour or more after the first produced the full effect, as in Cases XI. and XVIII.

In typhoid fever the action was usually prompt and satisfactory. In Case II., a young man, aged 25, with persistently high temperature and marked nervous symptoms, the drug was given on fourteen occasions, and after each dose there was a drop of from 3° to 5° . In the milder cases the effect was more striking, as in Case IV.

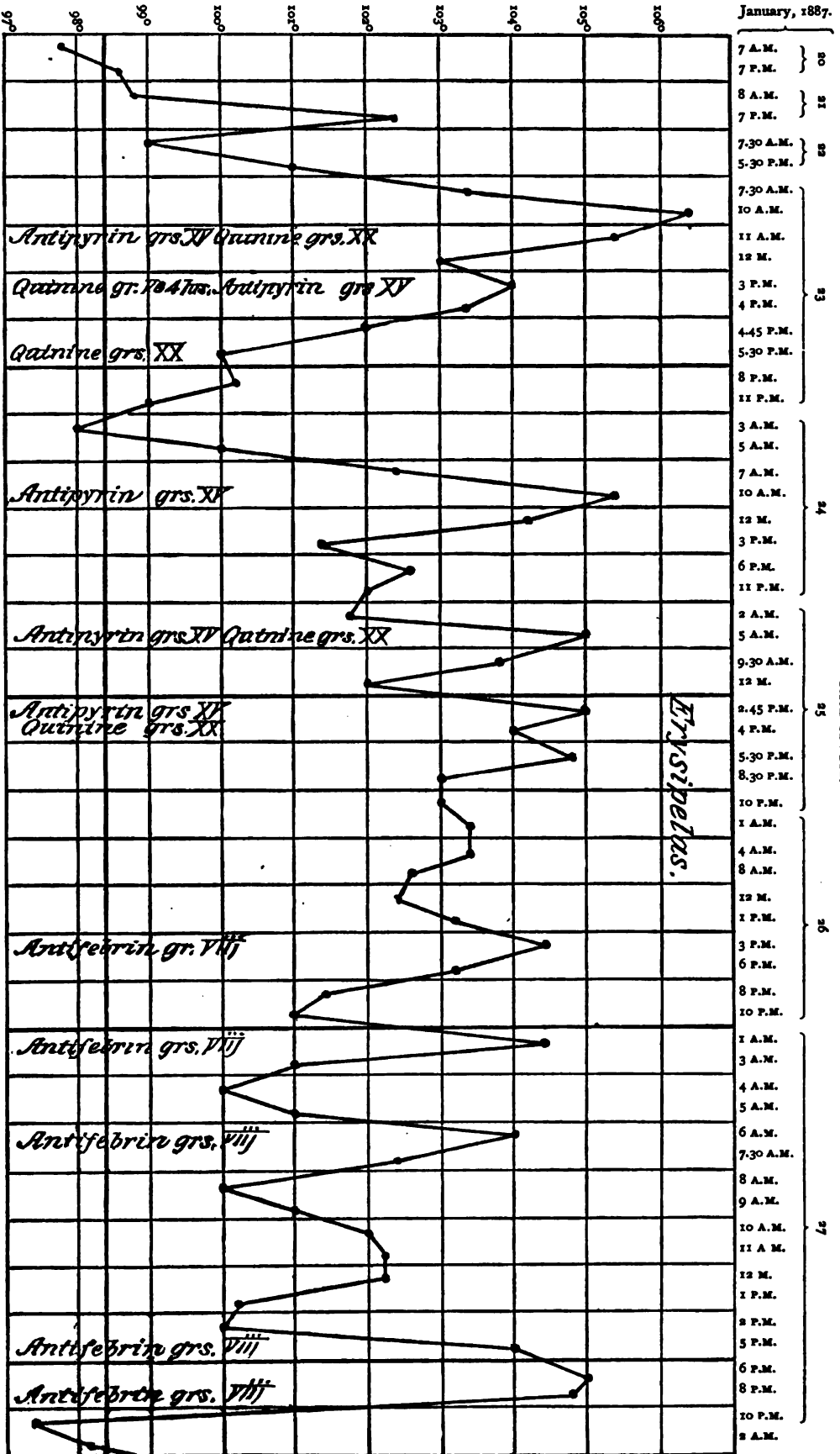
In the erysipelas cases the action was in each instance most decided.

In phthisis, with high fever, the drug was usually given in a single powder of gr. viii, when the temperature was above 103° , but in three cases the plan was tried of giving gr. iv four or five times a day. This did not seem very successful, and the patients did not feel so comfortable as with the single dose.

In a remarkable case of quartan ague antifebrin in 8-grain doses given before or during the paroxysm seemed to be without effect. One curious circumstance, however, is worth mentioning. The lad had always with the fever the most intense general urticaria, which the antifebrin seemed to prevent, much to the patient's comfort.

2. *Action on the Circulatory System.*—Usually with the reduction of the fever the pulse would fall, and a drop of 20 or 30 beats in two or three hours was frequently noted. Thus, in Case II., with a pulse-rate of 112 per minute, and the temperature at 105° , the pulse fell to 84 in four hours. In another case the pulse fell from 130 to 90 in four hours. A marked increase in the pulse-tension was observed in several cases. Even with a rapid fall of from 5° to 7° in two or three hours, there was no evidence of heart-weakness. Slight cyanosis, which is mentioned by one or two German writers, did not occur in any instance.

3. *Sweating.*—As with thallin and antipyrin, the action of antifebrin is almost invariably



CASE XVIII.

accompanied with profuse perspiration, which is often the first effect of the drug. Repeatedly I have seen the forehead beaded with sweat half an hour after the administration of 8 grains. This is sometimes a most unpleasant feature in the employment of the drug, and is the only one of which the patients have complained. In several instances the drug was combined with atropine, but without much effect. It does not seem to increase the night-sweats in cases of phthisis; indeed, under its use, one patient, who sweated much with the afternoon dose, had drier and, in consequence, more comfortable nights. In the severe typhoid case already referred to, I stopped its use, as the sweating seemed to weaken the patient.

4. *On the Urine.*—The only change noted was a marked increase in the amount in some of the cases. This is probably a direct result of the increased arterial tension.

5. The effect on the general condition seemed usually beneficial. A quiet sleep often followed an hour or so after its administration. The phthisical patients expressed themselves more positively than the others in this matter.

There were none of the disagreeable effects which we sometimes see follow the use of antipyrin and thallin. There was no instance of vomiting; and, with the exception of Case IV., there was no shivering or chilliness, such as is so common after antipyrin.

These limited observations confirm those of Cahn and Hepp and others, and I think that we have in antifebrin a prompt and powerful antifebrile agent, easy to take, and free from unpleasant effects. It has the advantage also of cheapness. Merck's article, which I have used, is only sixty cents an ounce, wholesale.

PHARMACOLOGICAL CONTRIBUTIONS FROM
THE UNIVERSITY OF PENNSYLVANIA.

THE PHYSIOLOGICAL ACTION OF THE
VALERIANATE OF AMMONIUM ON
THE NERVOUS SYSTEM.

BY WM. E. PARKE, M.D., PARKESBURG, PA.

SO far as I have been able to learn, no study has been made of the physiological action of valerianate of ammonium on the nervous system, and whatever value may attach to the conclusions arrived at in this paper, the experiments will at least have the merit of being the first in the field.

A number of experiments were first made on the frog to ascertain the general action of the drug on the system. Large and small amounts of the solution of the drug were injected into the peritoneal cavity of the animals, and their movements noted.

Administration of small amounts was followed in a few moments by clonic contractions of muscles over the whole body, and slight exaltation of the reflex action. If the size of the dose was increased the clonic contractions gave place to tetanic spasm and reflex action was lost, and when large toxic doses were given paralysis resulted almost at once. Whether convulsions or paralysis result appears to be determined by the size of the dose. The frog passes from convulsions into stupor, and from stupor to death.

Curiously enough, the physiological action of the drug was manifested sooner and much more powerfully in the fore than in the hind extremities. Thus, after the drug was given, clonic contractions appeared first in the fore legs, and were followed by tetanic convulsions in these parts, in which the legs were drawn up firmly against the belly. At this moment the hind legs were either not affected or were in the stage of clonic convulsions. At the autopsy it was found that the animal's heart was beating after it was completely dead to all nerve-excitation, thus pointing to the fact that the drug is pre-eminently a *nerve-poison*. (See Experiments 1, 2, 3, 4, 5.)

To determine whether the convulsions were cerebral or spinal in origin, section was made through the medulla, thus dividing the brain from the cord, and the drug given. It was found that the convulsions were still present, thus showing that they must be spinal. (See Experiment 6.)

The study of the reflexes was somewhat confusing, the evidence of different experiments seeming contradictory. In working out this part of the investigation the medulla of the frog was destroyed. A few minutes were then allowed to elapse for the animal to recover from the shock of the operation. A slightly acidulated solution was prepared, and the frog was suspended, with hind extremities in the solution. The time, from the moment of immersion until a reflex action was produced, was noted at intervals of five minutes. The acid solution was carefully washed off of the frog's legs after each immersion. The acid solution would of course furnish a uniform method of irritation. After the time of reflex was ascertained, the drug was given, and a second series of observations similar to

the first was made. In some of the experiments injection of the drug was followed by an exalted reflex,—*i.e.*, the reflex appeared sooner after the drug was given than before. In others the reflexes were probably either not altered or lowered. (Compare Experiments 6, 8, 11 and 7, 10, 12.)

It appears that when a small dose of the drug is given, or when only a small amount has been absorbed, the reflexes are exalted, but when the dose is large then the reflexes are lowered. These results would seem to indicate that the drug in small doses acts as a stimulant, and in large doses as a depressant, to the spinal cord.

In cases where the cerebrum was destroyed, it was found that the animal was little affected by doses which soon took life when the medulla alone was destroyed (or probably even when all the nervous system was intact). Thus, in Experiments 11 and 12, such doses as in Experiments 7 and 9 killed, were followed by no symptoms. This would seem to indicate that the drug is more of a poison to the brain than to the cord.

In order to ascertain whether the action of the drug on reflexes was peripheral or spinal, the vessels of one hind leg were ligated, the medulla having previously been destroyed. The method of doing this was as follows: The sciatic nerve was exposed, and carefully raised so as to pass a ligature under. This ligature was passed around all the other tissues of the limb, thus cutting off the circulation to the part. Now the drug was given, and it was found that the reflex continued in both the ligated and the unligated limb. (See Experiment 13.) Of course, after the ligation, the drug could not reach the peripheral nerve-endings, and, as the reflex action was maintained, we must believe that the action of the drug is spinal.

In studying the local action of the drug, the various parts of the nervous apparatus—*i.e.*, brain, cord, and nerves—were laid bare, and a crystal of the valerianate was placed directly upon them. Previous to this, however, the normal excitability of the nerve was ascertained by touching it with the electrode of a DuBois-Reymond induction coil, connected with a one-cell battery, the secondary coil or bobbin being moved up or down as required. The farther the bobbin is removed from the primary coil the weaker the current,—*i.e.*, twelve centimetres equals a weaker current than six centimetres.

It was noticed in every instance that a stronger current was required to excite a con-

traction of the muscle after a crystal was placed upon the nerve than before. Also, if the electrode was applied to the distal side of the crystal, it required a much stronger current to excite a reflex movement than before. So it is evident that the power of conduction in the nerve is very considerably decreased. This, of course, could be due to two things,—either to the physiological action of the drug upon the nerve by imbibition, or to destruction or disintegration of the nerve-fibre by direct action. That it was at least in part due to the latter is not improbable, for it was observed that when the crystal was placed on the nerve the surrounding tissues appeared bleached; however, the macroscopic appearance of the nerve itself was not changed. (See Experiments 14 and 15.)

When the cord was laid bare and treated in a similar way, the same result followed with respect to conduction of current,—*i.e.*, it passed the point of contact of the crystal only with difficulty or not at all. But when the electrode was placed in front of the crystal, the fore extremities contracted, and when placed back of the crystal, the hind extremities contracted. No doubt one factor in this obstruction to the current was the direct *local action* of the drug on the part, as suggested above; but there can be little doubt also that it was in part due to the *physiological* action of the drug. (See Experiments 16 and 17.)

It was noticed that immediately after the crystal was placed upon the cord there were tremors or clonic contractions of the front and hind legs. These phenomena were of course referable to the same cause as noted above when the drug was given hypodermically.

When a crystal of the valerianate was placed on the exposed brain there was at first considerable excitement; however, no more probably than would be produced by an irritant. The drug was of acid reaction, and would thus act. After a little time the animal became quiet, and was not easily disturbed, but when aroused moved around with difficulty. Later, it lay in a stupid condition, thus manifesting the depressant action of the drug upon the brain. (See Experiment 18.)

For a record of the experiments and conclusions see the following:

Experiment 1.—Frog healthy.

- P.M.
 1.35. 10 minims of a 1 per cent. solution administered.
 1.38. Clonic contraction of muscles over whole body.
 1.50. Frog in a stupor and reflexes dulled.

P.M.

- 2.10. Fore legs drawn close under the belly, and reflexes absent in them. Occasional kicking out with hind legs.
2.30. Frog still in a torpid condition; reflexes dulled.

Experiment 2.—Frog healthy.

P.M.

- 1.00. 10 minims of a 5 per cent. solution administered.
1.05. Tetanic convulsions of all the limbs, more noticeable in fore than hind legs; reflexes good.
1.15. Fore legs paralyzed and drawn close under the body; reflexes still good in hind limbs.
1.30. Reflexes good in hind legs.
2.30. Reflexes in all legs, but better in hind legs.

Experiment 3.—Frog normal.

P.M.

- 1.30. 15 minims of a 1 per cent. solution administered.
1.33. Clonic contractions of whole body.
1.45. Reflexes good.
2.30. Frog active; exalted reflex.
One day later. Frog living and apparently healthy.

Experiment 4.—Frog normal.

P.M.

- 1.20. 15 minims of a 10 per cent. solution administered.
1.25. Clonic spasms anteriorly and posteriorly; reflexes good.
1.35. Reflexes in hind extremities still good. Paralysis apparent, and all sensation lost in right fore foot.
1.40. Fore legs paralyzed.
2.15. Frog dead.

Experiment 5.—Frog normal.

P.M.

- 1.50. 60 minims of a 10 per cent. solution administered. When placed in water the frog lies flat on its belly.
2.00. Lying more on left than right side; pushes itself wearily around. Legs on left side seem paralyzed.
2.10. Slight efforts made by right fore leg. When pricked manifests no signs of pain.
2.30. Frog dead without a struggle.

Experiment 6.—Medulla and brain destroyed.

P.M.

- 2.55. 15 minims of a 1 per cent. solution injected, followed by very insignificant clonic contractions.
3.20. Reflexes good, probably exaggerated; fore parts more affected than the hind parts; fore legs drawn closely under the belly, and reflex very good in hind legs.
5.15. Exalted reflex in hind legs; none in fore legs.

Experiment 7.—

A.M.

- 9.40. Medulla destroyed.
The time of reflexes was noted by dipping the hind legs of the animal in acidulated solution.
10.10. Reflex in 1 second.
10.15. Reflex in 2 seconds.
10.20. Reflex in 2 seconds.

A.M.

- 10.22. 5 minims of a 2 per cent. solution injected (small frog).
10.26. Reflex in 6 seconds.
10.30. Reflex in 9 seconds.
10.35. Frog dead.

Experiment 8.—

A.M.

- 9.45. Medulla destroyed.
10.10. Reflex in $1\frac{1}{4}$ seconds.
10.15. Reflex in 3 seconds.
10.20. Reflex in 5 seconds.
10.23. 10 minims of a 2 per cent. solution injected (large frog).
10.27. Reflex in 3 seconds.
10.30. Reflex in 6 seconds.
10.35. Reflex in 7 seconds.
10.45. Reflex in 9 seconds.
10.47. 10 minims more solution injected.
10.50. Reflex in 9 seconds.
10.55. Reflex in 10 seconds.
11.00. Reflex in 11 seconds.
11.15. Reflex in 12 seconds.
11.30. Reflex in 15 seconds.
11.45. Reflex in 15 seconds. Feeble response.

Experiment 9.—

P.M.

- 1.30. Medulla destroyed.
1.45. Reflex in 10 seconds.
1.50. Reflex in 13 seconds.
1.55. Reflex in 14 seconds.
2.00. Reflex in 20 seconds.
2.02. 10 minims of a 2 per cent. solution injected.
2.08. Reflex in 85 seconds.
2.15. No reflex in 250 seconds.
2.55. Frog dead to all nerve-stimulus. Heart continues to beat long after sensation is lost, so the drug seems to be a nerve-poison.

Experiment 10.—

P.M.

- 2.10. Medulla destroyed.
2.45. Reflex in 25 seconds.
2.50. Reflex in 25 seconds.
2.53. 10 minims of a 2 per cent. solution injected.
2.57. Reflex in 36 seconds.
3.08. Reflex in 28 seconds.
3.20. No reflex in 100 seconds.

Experiment 11.—

A.M.

- 10.30. Cerebrum destroyed.
11.00. 10 minims of a 2 per cent. solution injected.
11.30. No symptoms manifested in half an hour.

P.M.

- 2.05. 10 minims more solution given; no symptoms.
2.20. More of the drug administered without any apparent effect.
One day later. Frog still alive, and reflexes very active.

P.M.

- 1.40. 60 minims of a 2 per cent. solution injected; no tremors followed, but the frog made an occasional desperate jump.
2.10. Frog dead.

Experiment 12.—Brain destroyed.

P.M.

- 2.00. 30 minims solution injected; this amount killed a frog with medulla destroyed in about half an hour.

The hypodermic needle was introduced under the skin in right side, and in a few moments afterwards the frog began to move around towards the right, and showed slight signs of twitching. Probably the brain was not wholly destroyed, and this may account for the symptoms.

- 2.10. Reflexes good.
2.50. Reflexes good.
3.15. Reflexes still good, but no other symptoms worth noting were observed.

Two days later. Frog still living; reflexes good. The experiment shows that the drug will not kill in the same time or with the same amounts when the brain is destroyed as when the medulla is destroyed.

- 1.35. 60 minims of a 2 per cent. solution injected into the peritoneum.
1.40. Reflexes considerably dulled.
3.20. Reflexes still very dull.

Experiment 13.—

P.M.

- 2.08. Medulla destroyed.
2.15. Blood-vessels of one hind leg ligated; reflexes good in both legs.
2.20. 5 minims of a 2 per cent. solution injected into the peritoneum; reflexes good in both legs.
2.25. Reflexes good in both hind legs.
2.30. Reflexes good in both hind legs.
2.40. Reflexes slightly impaired in both hind legs.
2.53. Reflexes gone in both hind legs.

In the following experiments the current used was that of the DuBois-Reymond induction coil and one-cell battery. The number of centimetres named indicates the distance between the primary and secondary coils.

Experiment 14.—

P.M.

- 3.00. Medulla destroyed.
3.08. Secondary coil removed 27 centimetres from primary gives minimum contraction of muscles.
3.18. 32 centimetres gives minimum contraction.
3.20. Crystal of the valerianate laid on the exposed sciatic nerve.
3.30. 18 centimetres gives minimum contraction.
3.35. Another crystal laid on the exposed nerve. The crystal seems to bleach the muscle where it touches, but no change appears in the color of the nerve. When the electrode is applied below the point where the crystal is placed upon the nerve, reflex action cannot be excited even with a very strong current.
3.45. Contraction obtained only when the bobbin is removed 12 centimetres.
4.00. 12 centimetres gives minimum contraction.

Experiment 15.—

A.M.

- 9.40. Medulla destroyed and sciatic nerve exposed.

A.M.

- 9.50. 28 centimetres gives response.
9.55. 30 centimetres gives pretty active contraction.
10.00. 31 centimetres gives contraction.
10.05. 32 centimetres gives active contraction.
10.10. Crystal of the valerianate laid on the exposed sciatic nerve of one leg. Bleaching of the tissues was observed, as noted above.
10.15. 13 centimetres gave a feeble response on the side upon which the crystal was placed, while 32 centimetres gave active contraction on the other side.
10.20. Another crystal placed on the exposed nerve.
10.30. 34 centimetres gave well-marked contraction on right side, but full strength of the battery gave no contraction on the side upon which the crystal was laid.

Experiment 16.—Medulla destroyed.

P.M.

- 1.45. Spinal cord laid bare.
1.55. Reflex in both fore and hind extremities, both on mechanical and electric irritation.
1.58. Crystal of the valerianate placed on the cord, followed by (1) tremors in the fore limbs; (2) tremors in the hind limbs.
2.10. Another crystal placed on the cord.
2.15. Electricity applied to cord.
When the electrode is placed on anterior part of the cord the fore limbs respond, but when placed behind the crystal only the hind limbs respond,—i.e., the current was not conducted through the part of the cord where the valerianate was applied. Before the valerianate was laid on the cord 22 centimetres caused muscular contraction; afterwards the secondary coil had to be pushed up to 12 centimetres to produce contraction.
2.45. 10 centimetres gives response.
2.50. 8 centimetres gives contraction in the fore legs.
6 centimetres gives contraction in the hind legs.

Experiment 17.—

P.M.

- 2.00. Medulla destroyed and cord exposed.
2.10. 35 centimetres caused minimum response.
2.15. 26 centimetres caused response; crystal of the valerianate placed upon the cord; discoloration of the tissues marked.
2.20. 20 centimetres gives response.
Tremors occurred in the hind limbs after placing the crystal on the cord. The current of electricity does not seem to be able to pass through the part of the cord upon which the crystal has been placed.
2.38. 16 centimetres gave contraction in hind legs when the electrode was applied to the posterior part of the cord, and 17 centimetres gave contraction in fore legs when applied to the anterior part of the cord.
2.40. Another crystal of the valerianate placed on the cord.
2.50. 11 centimetres gives contraction of the anterior limbs; 12 centimetres gives contraction of the posterior limbs.
3.05. Frog only feebly responds in anterior limbs to full power of the battery.

Experiment 18.—

P.M.

225. Brain exposed.
230. Crystal of the valerianate laid on the exposed brain.
235. Frog jumping around considerably; no more, however, than might be produced by an irritant.
245. Another crystal placed on the brain.
255. Animal gives one or two kicks, but for the most part remains quiet and is not easily disturbed.
305. Frog seems scarcely able to move around.
Another crystal laid on the brain. Frog remains stupid.

The drug was obtained from Rosengarten & Bros., and was of acid reaction. This probably gave rise to its irritant action.

The conclusions arrived at are as follows:

First.—With the exception of the convulsions, the drug is a universal depressant to the nervous system.

Second.—The convulsions are of spinal origin.

Third.—In small doses the drug probably stimulates the cord.

Fourth.—In large doses the drug depresses the cord.

Fifth.—Locally the drug is a universal depressant.

REMARKS ON THE THERAPEUTIC VALUE
OF MANACA, JAMAICA DOGWOOD,
AND EUPHORBIA PILULIFERA,
VIBURNUM PRUNIFOLIUM.

BY ALLAN S. PAYNE, M.D.*

I CONSIDER the *Franciscea uniflora*, manaca, one of the very best therapeutic remedies we have in cases of rheumatism, rheumatic gout, and eruptive diseases of syphilitic origin. I have seen many cases of chronic, subacute, and inflammatory rheumatism and syphilitic eruptions readily yield to the administration of the fluid ext. manaca, in doses ranging from 8 to 20 drops three times a day. I have been prescribing for the last eight years in my practice the manaca, and could, if I had the time, report numerous cases where its exhibition was of unquestioned value in inflammatory, subacute, and chronic rheumatism. In secondary and tertiary syphilis its action has been more prompt and more satisfactory to me than my old favorite remedies, iodide of potassium and sarsaparilla, or the bichloride hydrargyrum either. But as I

gave my views freely some time ago through the columns of the THERAPEUTIC GAZETTE as to the value of the fluid extract of manaca, I will now only say in my opinion it still holds its own, and pass on to the consideration of *Euphorbia pilulifera*. I have not had as much experience with this remedy as I could wish, having only prescribed it in three cases of spasmodic asthma, one case complicated with bronchial irritation.

Peter I., carpenter by trade, age 46, came to me in September, 1886, suffering with spasmodic asthma and bronchial irritation; complained of a sense of great weakness for want of breath; could not do any work at his trade; was always hale, hearty, and strong until during the war was confined in camp on the banks of the Appomattox; ever since had been subject to these asthmatic attacks. He was weaker, and considered this the worst attack he has ever had; had been longer unable to work than ever before. His complexion was sallow, skin dry and felt harsh to the hand, tongue coated with a thick whitish fur, urine scanty and high-colored. R 5 grs. sulph. quinine, night and morning; gave him sub. mur. hydr., gr. x; ext. coly. comp., gr. x; pulvis ipecac., gr. i; ol. cajuput., gtt. ii; divide into two powders; take one at 3 P.M., the other at bedtime; next morning teaspoonful *Carlsbad salts* in glass cold water; fluid ext. *Euphorbia pilulifera*, 30 to 50 drops *pro re nata*. He came to my office day before yesterday for me to prescribe for his wife and daughter. He says he is stronger and better than he has been since the war, and that the little black drops cured him.

I. P., farmer and fox-hunter, has been subject to attacks of asthma since childhood, the attacks getting worse; is 27 years old; has tried a great many remedies without any permanent benefit; would be well and hearty if it were not for these attacks. R 30 to 60 drops *Euphorbia pilulifera pro re nata*. Reports to me as having experienced great relief; has not had any attack this winter, although he has fox-hunted as much as usual; thinks the black drops cured him.

The other case I have not heard from; think he is also better, or I assuredly would have heard from him. This patient lives in an adjoining county. I have found the *Piscidia erythrina* (Jamaica dogwood) a valuable remedy in nervous persons, who cannot bear opiates, and in cases where you desire to promote an increase of the secretions rather than check them. The Jamaica dogwood seems to ease pain, promote refreshing sleep, and, if

* Late Professor of Theory and Practice of Medicine in the Southern Medical College, Atlanta, Georgia; Hon. Fellow Virginia Medical Society, etc.

repeated, will gently move the bowels and increase the flow of urine. These properties render it an exceedingly valuable preparation in persons of peculiar nervous cachexia.

Viburnum Prunifolium (Black Haw).—The fluid extract of viburnum prunifolium is a valuable auxiliary in the field of gynecology. In looking over the literature of this valuable drug I find it ample, so much so that I deem it unnecessary to say anything more in its favor than to express the opinion that those persons who believe it inert or worthless in a large number of diseases incident to the female organs of generation have made their experiments with worthless preparations of this drug. I have used the infusion made from the root of the black haw, but it is by no means as decided in its therapeutic action as the fluid extract. Its properties seem to be anodyne, tonic, and alterative, when administered per orem in sufficient doses. Its virtues are by reflex action or through the nerve-centres conveyed to the female organs of generation, and exert upon these important organs a benign influence not excelled by any drug with which I am acquainted. From its anodyne, tonic, and alterative action it has a wide range of adaptability in the field of gynecology. I myself have used the fluid ext. of viburnum prunifolium in anæmic amenorrhœa, dysmenorrhœa, membranous dysmenorrhœa, and threatened abortions many, many times. I successfully treated three cases of membranous dysmenorrhœa in Atlanta, Georgia, at the same time and in the same hotel. Two cases were residents of Atlanta, the third a young lady from the far Northwest. And last summer a young lady from the valley of Virginia fell under my charge. I mention these four cases particularly because they were unusually severe cases, had been under the care for a long time of several able physicians, and their lives had become, as they expressed it, a "*misery to them.*" Of course in my practice of nearly half a century I have met many cases, moderate cases of simple and membranous dysmenorrhœa. My treatment in these four severe cases of membranous dysmenorrhœa was, keep bowels soluble with Carlsbad salts, and take the following:

R Fluid ext. phytolacca,
Fluid ext. cimicifuga racemosa, aa ℥iiss;
Vinum colchicum sem., ℥iiss;
Fluid amm. guiac., ℥v. M.
Sig.—30 drops t. i. d.

Just before the expected molimen take:

Camphor., gr. x;
Pulv. Doveri, gr. x;
Ext. hyoscyami, gr. x.
Fiat 10 pills.

Two pills every two hours until pain ceases, then fluid ext. viburnum prunifolium 60 drops t. i. d.

To be continued until next molimen occurs. Plan of treatment to be continued until there is freedom from pain and an increase of the monthly discharge.

In a case of threatened miscarriage, the first thing for a woman to do is to go to bed and assume the horizontal position. The next is to get her bowels opened by a mild aperient, such as the Carlsbad salts, assisted in its action by an injection composed of mild ingredients. If there is pain after her bowels are opened, throw into the rectum 40 drops tinct. opii in a tablespoonful of starch and warm water, *tepid* water, and take a teaspoonful of viburnum prunifolium t. i. d. If the patient has been in the habit of miscarrying, whenever she feels the slightest pain she should go to bed, throw into her rectum the starch and laudanum injection, and take a dose or two of the viburnum.

In some cases of membranous dysmenorrhœa the practitioner will also find persistent leucorrhœa. In these cases give three times a day—

R Fluid ext. buchu,
Mur. tinct. ferri, aa ℥iiss. M.

S.—Teaspoonful morning, noon, and night in wine-glassful of water. Hot-water injection at bedtime, using hot water in large quantities, and an occasional dose of viburnum.

As soon as leucorrhœa is relieved withdraw the iron and buchu, and give the viburnum t. i. d. If patient is of scrofulous cachexia, give 10 drops syr. ferri iodide t. i. d. in combination with the viburnum.

I will briefly record a case or two of miscarriage that plainly show the value of therapeutic medication. These cases are to be divided into two classes: the first where there has been pain with muscular contraction, but no rupture of the membranes has occurred, and the fœtus is alive; the second where the membranes are ruptured or the fœtus is dead. I have already sketched my plan for preventing miscarriage; I will now name my remedy. My remedy is "*hydrarg. cum creta.*"

I have found by long and ample experience that 10 grs. hydrarg. cum. creta will in all cases of a dead fœtus, or ruptured membranes retained in utero, or in many cases of protracted labor, act with more *promptness, power,*

and *certainly* than all the preparations of ergot or any other emmenagogues that I have ever crossed in a large female practice reaching nearly a half-century. I will state one or two cases. I could give many had I the time to do so.

Mrs. R., age 30, of nervo-bilious temperament, mother of three living children, in my absence from home four days ago, in the opinion of an old midwife, had a miscarriage. On my return home her husband came for me. When I reached her house I found her bathed in a cold, clammy perspiration, pulse 120, weak, unable to sleep, no desire for food, with a feeling of general *malaise*. I found the midwife in the room. To her I said, "Well, did you see the dead child and the after-birth?" "Yes, sir." "You think everything has come away, and the womb has cleaned itself well?" "Yes, sir." "Well, I must tell you for once you are mistaken, and I will soon show you that you are mistaken." I gave Mrs. R. 10 grs. hydrarg. cum creta, and, with watch in hand, took my seat to await developments. In just sixty minutes she had a movement of the bowels, accompanied with a strong uterine pain, and lo! the dead fetus, about two and a half inches long, and the after-birth were both expelled by the single pain. Great was the old woman's astonishment when she saw she had mistaken "*clots*" of blood for the dead embryo and its membranes. This was not the first nor the last time I have seen this mistake made by the aged midwife. Gave Mrs. R. dose of Carlsbad salts in the morning, directed her to bathe her abdomen and uterine region with a strong infusion of eupatorium perfoliatum; inject hot water, with small quantity of chloride of lime in it, night and morning, and give fluid ext. viburnum prunifolium t. i. d., to be continued four days; convalesced rapidly.

S. B., mother of seven living children, is 42 years of age; has never before had any trouble in her confinements. I saw her the fifth day after her confinement, found her bathed in cold, clammy perspiration, pulse 110 and weak, unable to eat or to sleep, feels bad all over; had taken a dose of castor oil two days ago, but had no action; urine high-colored and scanty. Gave her 10 grs. of hydrarg. cum creta; in just two hours she had a movement from the bowels, accompanied by a strong pain, as strong as a labor-pain, and there came away a piece of after-birth the size of a silver dollar. Ordered her dose of Carlsbad salts next day; bathed stomach, over the womb, twice a day with a strong hot infu-

sion of the eupatorium perfoliatum; washed out the vagina with hot water, with a small per cent. of chloride of lime in it, and gave fluid ext. viburnum perfoliatum t. i. d., to be continued five days.

A little over twelve months and I was called to this same woman on the fifth day after her confinement, found her in the same condition, and brought away again a piece of after-birth the same size by same remedy. Two years after this, and it was in her last confinement, I had to ride ten miles to see this same woman, on the same fifth day after confinement, and found her in the same condition. My treatment was a duplicate of my first two visits in every respect. Both of these women are living, have passed the age for child-bearing, and are hale, hearty women.

Here the question naturally arises, Why is the hydrarg. cum creta, a mild aperient, such a powerful promoter of uterine contraction? There undoubtedly is great sympathy between the muscles of the rectum, particularly the levator ani muscle, and those of the womb. The muscular contractions of the womb and its expulsive efforts are *nil* unless assisted by the co-ordinate action of the levator ani muscle. The *modus operandi* I conceive to be this: The crude mercury in the hydrarg. cum creta is a powerful, the most powerful known promoter of peristaltic action of the intestines. It exerts its effects through the *whole tract*, and per consequence, produces full, free, harmonious contraction of the uterine and intestinal muscular systems. Both of these muscular systems, acting in harmony and in unison, can exert an expelling force, which, "singly and alone," neither one is capable of. Drastic purgatives, as podophyllin, are not promoters of harmonious action between these muscular systems, but rather the reverse. I do not wish to be understood as saying that the hydrarg. cum creta is the only remedy or the only means of producing harmonious action between the intestinal and the uterine muscular systems, but I do say it is the most prompt, powerful, and certain promoter of concert of action between these two muscular systems. On the other hand, I have myself produced this same concert of action by different remedies and different procedures, and at different times, when contractions of the uterus are irregular. When vagina is hot and dry, I order 2 grs. antimonii et potassii tartras in 6 ozs. of water, tablespoonful every fifteen minutes, until emesis is produced. This will bring on harmonious action,

and often the child will be speedily born. Then, again, I have known when bowels were constipated, and the pains not regular or effective, by throwing into the rectum a salt-water injection, and by cleansing out the overloaded bowels, the equilibrium of the system would be restored, the two muscular systems brought in harmony, with the best of results. At another time $\frac{1}{4}$ grain sulph. morphine has accomplished the same result. Again, once or twice or three times in my long professional career I have found the patient suffering severely, but as soon as I arrived, and she knew it, she would become so well satisfied, so well contented, that she would become entirely free from pain, until, after a long, fair trial, I have had to make them uneasy by telling them I must go home, as I had stayed as long with them as I could do; pretend to start, to be called back, and labor completed in fifteen minutes. Again, I have succeeded by making patient mad, mad as a hornet, before this harmonious action would be developed, but I never lose sight of the fact that I want the rectum to *assist*.

The patient will often tell you that her bowels are sufficiently open; but as the child's head passes the superior strait, it is pressing before it a mass of hardened feces: this will protract the length of the labor, and cause her longer and greater suffering. Some gynecologists say, do not interfere with this, leave it entirely to nature, but I say, grease your finger, and inadvertently slip it into the rectum, and slowly and carefully pick out these masses; the labor will be shorter, easier, and you may prevent a vesico-vaginal fistula or a ruptured perineum by so doing.

(To be continued.)

METEOROLOGY.

By A. COMSTOCK, M.D., TOLEDO, OHIO.

IN the matter of climate, as related to the medical profession, *guessing* is unsatisfactory, unscientific, and must be excluded. The advantage of climatic hygiene is recognized, and the necessity, though tardily admitted, must in many cases become an ultimatum. The fatal error, compounded in part from the indecision of the doctor and the patient, lies in the direction of inactivity and delay. In this country we have been particularly unfortunate till of late, because an ocean voyage lay between us and the springs or mountains or dry atmosphere

found in parts of Europe, and our own resources were comparatively unknown. When not unknown they were largely inaccessible, for but recently have we been able to reach the Adirondacks, the mountains of North Carolina, the soft air of Florida, or the foothills of California and Colorado. There is a great variety of condition and adaptability to be secured, and, if properly investigated, it will soon be learned and appreciated.

Much has been written of late by medical authors, and much generalizing, together with much expansion of discretion. The tendency is to claim too much, and present the attractions of some thermal spring or lime-grove as a pain-killer of the widest latitude, or give it the status of a patent nostrum. The factors which go to make up the issue are the condition of the patient and the quality of the climate. So long as in the history of evolution man is an air-breathing animal, and so long as houses are badly constructed, and towns located for convenience of commerce regardless of anybody's lodging apartments, light, heat, drainage, and breathing space, so long will life be cheap and money dear. The great mass will continue to risk life and recklessly lose it, but some desire life, and will make the fight for it. In a monograph by Dr. William, in last July's *Sanitarium*, on "The Climatic Treatment of Phthisis," he comments as follows as to his notion of a first-choice resort in such cases: "It should possess a pure water-supply and adequate drainage; it should be of a dry and porous soil, and should be favorably situated with respect to neighboring heights and marshes and prevailing winds. It should be equable in temperature, and possess the maximum of pleasant weather. It should not be so hot as to be enervating, nor so cold as to prevent out-door exercise and proper ventilation of houses. It should afford plenty of amusements; it should not be crowded with consumptives, and it should be sufficiently unfashionable to admit of hygienic dress; should be sparsely populated and newly settled." To be out of doors, to be entertained, to be properly clad and fed, and sleep—for one-third of the time we must be in bed—are the staples. Climate that will do for some conditions and stages of phthisis will not be best for others, and that which will quiet and subdue a neurotic lesion may not be the place for a defective kidney; as also is the reverse true. A malarial diathesis must seek an environment that doubtless would not be suited to the victim of rheumatism.

What we require, in order to guide us and

advise our patients, is the *detail* of climatic symptoms, as we are presumed to know the symptoms of the case before us, and we desire that, rather than the opinion of any one man of any one locality in such cases, since we assume the responsibility.

Fully appreciating the justice of this line of thought, some of the profession in Colorado have been urging for years a systematic report from which an intelligent inference may be drawn. During the session of the Legislature preceding the present one, a charter was granted to the incorporators of the "Colorado Meteorological Association." Being without an appropriation, a voluntary effort was made by some of the medical men, aided by members of other scientific bodies, to fairly represent some varieties of climate in this interesting region. The work has been in progress for nearly one year, and includes observations from about twenty-five places. Some of the points are supplied with all the most approved instruments to note direction and velocity of wind, barometric and thermometric conditions, precipitate of moisture either by rain or snow, and humidity of the atmosphere, portions of the day when cloudy or clear sky is observed, etc. In the case of others, barometers and hygrometers are absent.

Where the United States signal stations are, observations are taken five times per day, and

at all points not less than three,—namely, at 7 A.M., 2 P.M., and 8 P.M., from which the average mean is derived. The reports are sent to headquarters for each week, from which the monthly publications or bulletins are compiled. The present Director of Observations is F. H. Loud, Professor of Natural Science at the College of Colorado Springs. These reports will increase in value as an interval of time and wider observation follow, for the selection of points will be noted as well taken by reference to the chart of Colorado.

The elevations of the different observatories are in feet as follows: Alma, 10,300; Cañon City, 5344; Colorado Springs, 5992; Denver, 5294; Dodge City, Kansas, 2517; Durango, 6520; Fort Collins, 4900; Fort Lewis, 8500; Georgetown, 8500; Glenwood Springs, 5200; Golden, 5665; Hugo, 5068; Idaho Springs, 7500; Las Animas, 3899; Longmont, 5000; Montrose, 5825; Monte Vista, 7200; Pandora, 8700; Saguache, 7750; Santa Fé, 7026; Silverton, 9400; Trinidad, 6070; Westcliffe, 7800; Pike's Peak, 14,131.

The report for the month of November, 1886, is here appended to indicate the character of work and figures for that time.

The following table contains statistics of temperature (T) and rainfall (R) for the month of November in fifteen years:

Comparison of Different Years.

Denver.				Colorado Springs.				Denver.				Colorado Springs.			
Year.		T.	R.	T.	R.	Year.		T.	R.	T.	R.	Year.		T.	R.
1872.....	33.7	0.69	30.4	0.26	1877.....	35.2	0.73	30.9	0.22	1882.....	37.4	0.71			
1873.....	41.1	0.16	39.2	0.00	1878.....	41.6	0.67	38.1	1.10	1883.....	42.9	0.32	38.1	0.00	
1874.....	42.4	0.08	37.9	0.35	1879.....	38.4	0.21			1884.....	42.1	0.19	36.4		
1875.....	37.8	1.28	37.1	1.19	1880.....	22.0	0.83			1885.....	42.9	0.55	39.7	—	
1876.....	37.5	1.50			1881.....	36.1	1.68			1886.....	33.2	1.93	32.9	0.19	

The arrangement of the following tables (which refer to November, 1886, alone) is similar to that explained in previous bulletins. To the statistics of wind, in the first of them, may be added those for Colorado Springs,

where the total movement was 7621 miles, and the mean velocity 10.6 miles an hour. Observation hours are expressed in Denver time:

	Mean barometer.		Wind.		Temperature.			
	Actual pressure.	Reduced to sea-level.	Total movement.	Mean velocity.	Means at			Monthly mean.
					5 A.M.	1 P.M.	9 P.M.	
Denver.....	24.721	30.073	6,683	9.3	27.5	41.3	30.8	33.2
Dodge City, Kan.....	.....	30.109	6,062	8.4	.....	.....	.....	38.1
Montrose.....	24.357	30.179	3,304	4.6	22.7	37.5	25.8	28.7
Las Animas.....	26.061	30.089	4,956	6.9	20.5	47.7	28.8	32.3
Pike's Peak.....	17.597	30.126	21,085	29.3	5.0	9.0	7.3	7.1
Santa Fé, N. M.....	23.277	30.116	5,676	7.9	27.1	41.4	32.6	33.7

	Extreme temperatures.				Means of daily extremes.			Humidity.		Rain and snow.
	Highest.	Date.	Lowest.	Date.	Maxima.	Minima.	Maxima and minima.	Relative.	Dew-point.	
Colorado Springs.....	66.0	4	.....	17	46.1	20.9	33.5	.....	.....	0.19
Denver.....	63.0	4	— 6.0	17	45.5	20.4	33.0	61.3	19.1	1.93
Dodge City, Kan.....	73.0	1	— 7.3	18	.....	.....	.....	65.3	25.7	0.24
Fort Collins.....	.....	...	— 6.0	17	.....	16.7	.....	71.9	21.7	1.18
Fort Lewis.....	59.0	6	— 13.0	17	41.2	15.4	28.3	.....	.....	1.30
Georgetown.....	49.0	7 & 8	— 3.5	17	35.8	22.3	29.1	.....	.....	0.85
Golden.....	64.0	4	— 10.0	17	44.5	20.9	32.7	.....	.....	2.82
Husted.....	67.0	4	— 13.0	17	44.7	14.1	29.4	.....	.....	0.25
Idaho Springs.....	55.0	4	— 7.0	17	41.3	23.0	32.1	.....	.....	.....
Las Animas.....	75.2	4	— 6.0	17	51.7	17.2	34.5	74.7	23.6	0.23
Montrose.....	56.0	6	— 18.5	17	42.1	15.6	28.9	65.9	18.0	0.54
Pandora.....	64.4	5	— 5.8	17 & 23	44.4	11.6	28.0	.....	.....	.....
Pike's Peak.....	23.9	7	— 27.0	17	13.5	2.3	7.9	77.0	0.6	1.07
Santa Fé, N. M.....	58.8	5	— 0.4	17	45.5	22.3	33.9	49.3	14.8	0.30

	Temperature.							Monthly mean.	Rain and melted snow.
	Extremes.				Means at				
	Height at 2 P.M.	Date.	Lowest at 7 A.M.	Date.	7 A.M.	2 P.M.	9 P.M.		
Alma	42	7	— 8	17	13.6	26.9	17.3	18.8	0.74
Cañon City.....	68	4	10	17	32.5	48.7	36.0	38.3	
Colorado Springs.....	65.5	4	6	17	27.8	44.2	29.7	32.9	0.19
Durango	63	6	— 9.5	23	18.1	39.8	26.0	27.5	1.44
Fort Collins.....	64	4	1	12	24.8	41.1	26.0	29.5	
Fort Lewis.....	56	6	— 9	23	21.2	38.2	23.5	26.6	1.30
Georgetown.....	48	7	3.5	16	25.4	33.4	27.7	28.6	0.85
Glenwood Springs.....	57	7	3	18	22.4	40.9	26.4	29.0	
Golden.....	62	4	14	12	30.7	41.5	33.7	34.9	2.82
Hugo.....	60	30	0	17	26.5	39.2	28.6	30.7	
Idaho Springs	54	4	4	17	25.8	37.1	28.1	29.8	
Longmont.....	68	4	— 14	17	20.6	39.9	23.7	27.0	
Monte Vista	54	4	— 5	17	14.6	39.3	21.8	24.4	0.28
Saguache.....	57	6	— 1	17	17.2	41.2	23.1	26.2	0.45
Silverton.....	52	6	1	27	15.2	36.2	19.5	22.6	1.59
Trinidad	71	30	— 13	17	24.6	50.9	30.9	34.3	
Westcliffe.....	70	3	— 22	17	16.0	44.7	25.5	27.9	1.22

MURIATE OF PILOCARPINE IN URÆMIA.

BY A. D. BUNDY, M.D., ST. ANSGAR, IOWA.

THERE is nothing new either in the drug or in the use of the same in this short communication. But I wish to emphasize its great use and efficiency in cases of acute nephritis, where the suppression of the urine is nearly complete, and in which the patients are in extreme peril unless the kidneys can be temporarily relieved by prompt and free sweating. I know no remedy so efficient, prompt, and free from danger as pilocarpine. I have used it hypodermically in children with the best results, and no sign of injury. There are times in every practitioner's experiences when to have such a remedy at hand, and at the same time the boldness and knowledge to use it, is to tide a patient over a critical place until other remedies and means can be used to follow up its beneficial effects. One of such occasions is such as I have mentioned. When convulsions and coma have possession of such cases, time is almost wasted in pouring drugs into the stomach, even were it possible, or even injecting the same per anum. Pilocarpine, according to my experience, which is quite large, has done me and my patients royal service. It ought to be in the possession of every physician. The knowledge that it is used but little in the country is my reason for writing this.

USE OF THE ABDOMINAL BANDAGE IN THE SECOND STAGE OF LABOR.

BY CHEVES BEVILL, M.D., WINFIELD, ARK.

IN the September number of the THERAPEUTIC GAZETTE, 1886, page 599, is an article headed as the above, by Dr. J. Wesley Welker, of Stromburg, Neb. I have looked closely in every number since that for some one to say something on the same subject.

I hope that Dr. Welker will not be offended at what I say (such questions strictly belong to obstetric journals rather than the GAZETTE). I am satisfied that many young physicians who have read Dr. Welker's article will be badly disappointed in their expectations by the use of the bandage.

I have used the bandage regularly ever since April, 1877, and have found great benefit by its use in one class of troubles,—i.e.,

anterior or lateral obliquity of the uterus. Meigs used it in his practice years ago. Cazeaux, in his great work on obstetrics, recommends it in cases of obliquity. On page 412 of the *American Journal of Obstetrics*, April, 1880, is to be seen an account of an "elastic bandage" used by Drs. Morton and Marcy. These gentlemen used it, and speak in high terms of its use in holding the "fundus down," and state that it "was a part of the obstetrician's armamentarium in the Middle Ages."

The main thing I wish to speak of is that Dr. Welker's cases were taken indiscriminately, without seeing whether it was necessary to use the bandage or not. Every physician of any experience has found scores of such cases as the doctor refers to. Now, if these cases are noticed closely, they will be found to be only natural cases of labor, not one word said about any obliquity of the uterus existing. I have seen many cases of labor that were completed in as short a space of time as is here spoken of. If the doctor had cited cases that had been in labor for several hours, and in which the os would turn back in the hollow of the sacrum when the pains came on, there would be more encouragement for the young physician to use the bandage.

I have used it in the second stage of labor in four cases in the last ten months, where the uterus would tilt over anteriorly, and had continued to do so for two or three hours before I applied any bandage. These cases were all women who had borne several children, and their abdominal muscles were relaxed, and this bandage was a great help to them in giving support to the back and abdominal muscles, and keeping the os in the line of the pelvic straits until the child's head would become engaged in the straits.

I wish all physicians would use the bandage in such cases. It would save the mother much pain and hasten labor, and would save the child in some cases. But it will not, according to my observations, work in every case as well as in the cases above referred to.

I saw a case a year ago where a child's life was lost, I am satisfied, by not using the bandage. The forceps were applied, and the child's head badly bruised by them. The physicians in charge said that the os would turn back in the hollow of the sacrum, and that the os was fully dilated. In such cases use the bandage, or any other contrivance. But let us not make doctors think that it will do in all cases as well as in such as above referred to.

The Therapeutic Gazette

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PHILADELPHIA.

DETROIT, MICH., March 15, 1887.

GEO. S. DAVIS, Medical Publisher, Box 470.

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(Journal increased to 72 pages.)

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Editorial communications should be addressed 1925 Chestnut Street, Philadelphia. Business communications should be addressed to the publisher.

Leading Articles.

BROMISM.

THE series of phenomena known as bromism must be familiar to almost every active practitioner of medicine. Although, therefore, mild poisoning by the salt is very frequent, really serious symptoms are rare, and literature is almost bare of instances of death fairly attributable to poisoning by bromide of potassium. The only case in which death has been recorded as due to acute poisoning by the bromide of potassium is one reported by Küssner, in which a patient having been ordered to take daily 1 to 2 teaspoonfuls of a solution containing one hundred and fifty grammes of the bromide of potassium, took a teaspoonful hourly until during the second day, when he had used about half the mixture. Death occurred through the failure of the heart. We have known half an ounce of the bromide to be taken at a single dose with no evil results, and it seems very doubtful whether it would be possible to take life by a single dose of this salt, as any very large amount would be very apt to produce vomiting and rejection of much that had been swallowed. Cases of fatal poisoning by the

continuous use of the drug are also excessively rare.

Dr. Hameau, of Bordeaux, reported in the *Journal de Médecine* of Bordeaux, March, 1868, the case of a young woman, aged 22, who had taken about four and a half pounds of the bromide of potassium in ascending doses during a treatment of ten months, and who, whilst in a condition of cachexia, with yellowish skin, a copper-colored exanthema upon the forehead, colic, gastralgia, insomnia, etc., was taken with delirium, profuse sweats, great prostration, followed by death in four days.

Dr. Anton Eigner, in the *Weiner Med. Presse*, Nos. 25 to 34, 1886, reports the case of a woman who took two and a half kilogrammes—about five pounds—of bromide in less than a year. On the 27th of September the woman was quiet, with pupils normal, except that they were slightly unequal, with the tongue heavily coated, gums swollen, some inflammation of the mucous membrane of the nose, gums, and teeth, and a heavy odor of bromism upon the breath. There was also a marked eruption of acne, distinct lessening of the sensibility of the gums, tongue, and fauces, general weakness, and much pain in the forehead. When movements were attempted with the hands there was a distinct tremor, but the woman was still able to walk, though with some tendency towards staggering. Some hours later excitement came on and soon passed into delirium, the patient getting out of the bed, wandering around with short steps, feeling for something with her trembling hands, suffering from hallucinations of sight and hearing, and complaining bitterly that she was being poisoned. This condition lasted, with some ameliorations and exacerbations, from the 28th of September until the evening of the 1st of October, when death occurred. At the autopsy, pronounced bronchitis and lobular pneumonia of the lower lobe of the right lung were found; but the brain, meninges, and spinal cord revealed no abnormality even to the microscopic examination. It is very probable that the excessive amount of bromide of potassium taken had in this case something to do with the death, by predisposing or possibly producing the bronchitis and the pneumonia, yet, although the mental disturbance is affirmed to have preceded the coming on of the lung-trouble, doubt must remain whether the case ought to be considered one simply of death from bromism. It has not been long since it was shown in an editorial in this journal that in some cases the cerebral symptoms overshadow the ordi-

nary signs of pneumonia. It seems probable that in the case reported by Dr. Eigner the pneumonia was not detected at its onset. The delirious excitement is more like the ordinary cerebral nervous symptoms of the so-called cerebral pneumonia than it is like the apathy of depression, the gradual burying in oblivion of all the cerebral functions, which is characteristic of typical bromide-poisoning.

PATHOGENETIC THERAPEUTICS.

ON the evening of February 7, Dr. Harold C. Ernst, of the Medical School of Harvard University, read before the Philadelphia Academy of Surgery an account of the experimental research upon rabies which he has made during the past six months. The report bore upon its face every evidence of careful, clean-cut, scientific work, and, so far as one can judge from the hearing of a paper, was conclusive in its results.

Dr. Ernst did not use the virus of "street rabies," but one which he obtained from the laboratory of Pasteur. His labors seem to prove that this Pasteurian virus, when introduced either hypodermically or under the dura mater, causes a definite disease, with a period of incubation averaging from seven to twelve days, but in very rare cases as short as three, and in others as long as twenty-three days; that it especially abounds in spinal cords of animals poisoned with it; that it is capable of preservation for many months by the freezing of the cord, but loses its intensity by being slowly dried; and that if an animal which has been poisoned by the active virus be subsequently inoculated a number of times by impaired or weakened virus, fatal illness is avoided. This, of course, does not prove that the inoculation of this virus would be effective against true street rabies, because it still remains a matter of doubt whether or no the Pasteurian virus is that of true rabies, although the resemblance of the diseases produced by the Pasteurian virus to street rabies and the assertions of Pasteur, of course, render highly probable that his virus is a modified street rabies virus. Dr. Ernst quoted the work of M. D. Frisch, of Vienna, as confirmatory of his own results and of those previously obtained by Pasteur. At this writing the full memoir of M. de Frisch has not been published, and the Vienna correspondent of *La Semaine Médicale* asserts in the number which has just reached this country, that although

M. de Frisch found that the Pasteurian virus would protect the animal from itself, it failed in every case in which the original poison was taken directly from a case of street rabies. It is perfectly evident that the scientific battle now rages just about this point, and that the Pasteurians, before their results can be accepted, must prove that the disease produced by the Pasteur virus is active against true street rabies. It is a most unfortunate circumstance that the loose and excessive talking, and the broken, tumultuous manner of reporting his work, which seems to be inherent to the constitution of M. Pasteur, prevents any one from knowing with certainty where he did get his original virus. We suppose, however, that a great genius, such as M. Pasteur undoubtedly is, can only work in accordance with his own nervous organization, and the world must be thankful for what is achieved.

Out of the uncertainties this truth *appears* to emerge, namely, that an animal which has been poisoned by an active virus can be prevented from sickening and dying by frequent subsequent inoculations with the same virus in a weakened or impaired state of activity. To us this is astounding, because it apparently involves the recognition of a new law or principle in therapeutics! A law or principle which has been previously asserted by various crack-brained practitioners of medicine, whose half-witted condition gave to them that imaginative foresight which the common people attribute to a "natural," but whose complete lack of scientific brains prevented from establishing or even rendering probable their imaginative speculations.

Since the days of Jenner it has been known that the inoculation with vaccine matter will prevent the development of smallpox. The theory has always been that a zymotic disease destroys in the system something upon which it feeds, and thereby protects from a second attack. Vaccination has been supposed to destroy in the human system the sustenance of smallpox virus, and thereby prevent the development of the disorder. In the case of hydrophobia, however, the inoculation is practised after the poison has been received into the system, and during a time when the disease really exists, for it is absurd to suppose that the system is not diseased until symptoms break forth. There must be during the period of incubation a progressive alteration of nutritive processes, which only manifests itself in gross symptoms when it has reached a certain intensity. Is it possible that in the

case of the reinoculation with Pasteurian virus organisms are rapidly developed in the system, which are nearly free from toxic properties, and still have the power of destroying that which feeds the more dangerously active entity? Whatever may be the explanation of this newly-discovered principle or law governing the removal of diseases, the thought at once occurs that its power does not simply apply to hydrophobia, but probably dominates the so-called zymotic diseases, or, in other words, all diseases which are dependent for their existence upon the presence in the blood of an organism. If this be so, the smallpox poison, the virus of scarlet fever, the toxic agent of typhus and typhoid fevers, etc., are to be fought each by itself in an altered form, and the day seems approaching in which in these diseases we shall be able not merely, as at present, to alleviate the symptoms but to strike at the very *fons et origo mali*.

FAITH-CURE.

WE have never discussed the subject of faith-cure in our columns because the matter has always seemed to us outside of the domain of rational therapeutics. Any physician who could be swept off his feet by the torrent which flows so tumultuously, although in a narrow and popular channel, could scarcely be influenced by any scientific discussion of the subject.

We are very glad, however, to call the attention of our readers to a discussion of faith-cure in the *Century Magazine* for the month of March. There are two articles, one by Mr. R. Kelso Carter, which is an apology for believers in the doctrine, and another by the Rev. Dr. Buckley, editor of the *Christian Advocate*, who writes very cogently and sensibly. We quote a few paragraphs from him, and trust that our readers will call the attention of any of their clients who may show symptoms of this madness to the article:

"It is a means of obtaining money under false pretenses. Some who promulgate these views are honest, but underneath their proceedings runs a subtle sophistry. They establish institutions which they call faith-homes, declaring that they are supported entirely by faith, and that they use no means to make their work known or to persuade persons to contribute. Meanwhile they advertise their work and institutions in every possible way, publishing reports in which,

though in many instances wanting in business accuracy, they exhibit the most cunning wisdom of the children of this world. . . .

"The horrible mixture of superstition and blasphemy to which these views frequently lead is not known to all persons. I quote from a paper published in Newark, N. J., in the interest of faith-healing:

"DEATH.—Three of the richest men in Ocean Park, N. J., have died. Faith-healing has been taught in the place, but was rejected by them, so death came."

"CHARLESTON, S. C.—A few years ago the Holy Ghost sent me to preach in that city. But they rejected the gospel and me. A wicked man shot at me and tried to kill me, but God saved me so that I was not harmed. . . . But I had to leave Charleston, and do as the great Head of the Church said, . . . "When ye depart out of that house or city, shake off the dust from your feet." Earthquake, September 1, 1886; one-half the city in ruins. It has a population of about fifty thousand people. Ye wicked cities in the world, take warning! God lives!"

MINERAL SPRINGS OF THE UNITED STATES.

THE number of people freighted with their loads of dollars who travel from these United States yearly to the fountains of healing waters which gush forth from the rocks of Central Europe is not a few. It is to be expected that on a continent which boasts of two great ranges of mountains and also immense masses of every known geological strata, mineral springs would abound. We confess, however, that before looking over the Thirty-second Bulletin of the United States Geological Survey (written by Dr. A. C. Peale, and just issued from the governmental printing-office at Washington) we had little idea of the vast numbers of thermal springs in the United States. It is perfectly plain that the only excuse American physicians have for sending patients abroad, so far as natural waters are concerned, is to be found in our ignorance of the exact constituents of our own native mineral springs, and in the lack of proper hotel accommodations at the springs.

Hitherto the fullest published list of our mineral springs has been that compiled by Drs. William Pepper, H. I. Bowditch, and associates, and published in 1880 in the thirty-first volume of the "Transactions of the American Medical Association." It enu-

merates about 500 localities. In the compilation of Dr. Peale, 2822 localities of mineral springs are mentioned. In the Northern Atlantic States there are 405 localities and 637 individual springs; in the Southern Atlantic States, 371 localities and 1048 individual springs; in the Southern Central States, 1201 localities and 1911 individual springs; in the Northern Central States, 601 localities and 1276 individual springs; in the Western States and Territories, 722 localities and 3949 individual springs; making a total of 8821 springs. But a small proportion of this immense number of waters has been analyzed. Thus, out of the nearly 4000 known mineral springs in the Western States only 132 have been studied by the chemist, and only 18 have been used as health resorts.

The more the subject is examined, the greater is the contrast between our actual knowledge of our mineral waters and the apparent riches of this continent. In Wyoming alone, with its 2246 springs, the larger proportion of them thermal, only 7 waters have been analyzed. It would appear that almost every possible water is represented within the mere limits of the National Park.

THE DIGESTIVE FERMENT OF *CARICA PAPAYA*.

WE have recently had put into our hands samples of Finckler's papoid, which is said to be a digestive ferment prepared from the *Carica papaya*, or papau apple. In order to discover whether this substance is really of any value as a food ferment, we placed it in the hands of Dr. Samuel G. Dixon, who, in the Chemical Laboratory of the University of Pennsylvania, made the following tests of it:

TEST NO. 1.

1 gm. of fresh fibrin.
 $\frac{1}{8}$ gm. of papoid.
 50 c.c. of water.
 Temperature, 90° F.
 Time, 12 hours.
 Result, little or no digestion.

TEST NO. 2.

2 small pieces of coagulated egg albumen, with about 10 times the volume of papoid and 50 c.c. of water.
 Temperature, 80° F.
 Time, 12 hours.
 Result, about $\frac{1}{3}$ of albumen broken up.

This test was continued for twelve hours longer, with little or no additional digestion.

TEST NO. 3.

70 mg. of dried fibrin.
 10 mg. of papoid.
 50 c.c. water.
 4 drops of HCl.
 Time, 6 hours.
 Result, unsatisfactory in the extreme, little or no fibrin broken up.

These tests were sufficiently accurate and careful for practical purposes, and demonstrate the uselessness of any further experimentation with commercial papoid.

AN INVESTIGATION OF PASTEUR'S METHODS.

AMONG the critics of Pasteur none have excited more interest than Von Frisch, of Vienna. He was sent by his government to Paris to learn the details of the method, and on his return he repeated many of the experiments of Pasteur, and has studied the subject of hydrophobia critically. His conclusions from work done during 1886 are embodied in his statement to the Vienna Academy of Sciences, and we abstract them from the *Medicinisches-Chirurgisches Rundschau* for February 1, 1887. His statements are in the form of conclusions drawn from experimental work, and are as follows:

The poison of hydrophobia exists in its most concentrated form in the central nervous system (brain and spinal cord) of the animal poisoned.

Small amounts of cerebro-spinal substance, taken from a dog poisoned with hydrophobia and injected into another animal subdurally by trephining, call forth, after a latent period which varies but slightly (fourteen to twenty-one days), the same disease with absolute certainty.

From this source rabies is capable of being conveyed in a similar manner to other animals.

After subdural injection with portions of the marrow of men who died with rabies, animals become ill with the same symptoms, and after an equal time of incubation. From this fact the identity of the process in men and animals seems perfectly established.

After the subcutaneous injection of cerebro-spinal matter, the infection is less certain and the time of incubation is longer than after subdural injection of the virus.

The quantity of virus injected subcutaneously is in inverse ratio with the length of the period of incubation; the less the amount

injected, the longer the incubation period required.

Through successive subdural inoculations of cerebro-spinal substance containing the virus of rabies there resulted after a succession of generations a shortening of the time of incubation, which occurred at first very irregularly, then more regularly, and finally in decreasing length.

The fixed virus obtained from Pasteur, which was derived from the successive inoculation of forty to fifty generations of virus, and said to have seven days as a time of incubation, excelled the virus of "street rabies" in intensity, not only in that the disease appeared sooner, but also that the animals inoculated, whether by the subdural or subcutaneous method, acquired the disease *without exception*.

The virus of Pasteur appeared, when transferred through successive generations, to have no appreciably shorter time of incubation (animals were sometimes made ill on the sixth day), while the period was not constant at seven days, but was sometimes extended to ten, and even twelve days. The transference of "street rabies" virus for two or three generations resulted in an incubation period of from eight to twelve days, and a virus of equal intensity with Pasteur's laboratory virus.

A virus like that of Pasteur with an incubation period of seven days can, be obtained not only by his method but also by a series of transfers, which bring it much earlier to its potency, and this virus shows itself very constant in its effect and period of incubation.

Drying the cerebro-spinal substance at 20° C. over caustic potash greatly diminishes the virulence of the matter, and after fourteen to sixteen days of such treatment its power has entirely gone.

Animals for experiment which were inoculated with progressively diluted virus subcutaneously, were protected by this from the action of stronger virus, provided that the series of injections of progressively stronger virus did not follow each other too rapidly.

In contradiction to Pasteur's statement, animals inoculated for ten days with virus increasing in strength, but subcutaneously administered, were not proof against "street rabies;" it was only when the inoculation was subdural that immunity was sure.

Rabbits and dogs which, after subdural inoculation with "street rabies," were treated by the prophylactic inoculation given subcutaneously, were seized with rabies.

Pasteur insists that prophylactic inocula-

tion should not be delayed too long, but Von Frisch has followed his method in detail. Pasteur recommends the inoculation of an animal within twenty-four hours, repetition every two hours, and a repetition of the series of inoculations, two or three times, while the prophylactic inoculation should begin at once after infection, at least on the following day.

Experiments conducted after this plan on dogs and rabbits gave no good results; the animals developed rabies even after this energetic treatment. These experiments showed, however, a fact of value: that the rapid repetition of inoculation with material of increasing intensity did not result in protection by the weaker virus against the stronger which followed it. Among a number of rabbits and dogs upon which were performed "control experiments" to test these conclusions, and on which the intensive inoculation without previous infection was made, a very large proportion developed rabies and died with it even when the time of incubation reached thirty-four days. From these experiments the conclusion is reached that more researches upon animals must be made before reliable results can be obtained, and that we have no reasonable ground for treating human beings by prophylactic inoculation after bites while the strong probability exists that through the prophylactic inoculation, at least through Pasteur's method of intensified inoculations, the disease itself may be communicated.

TREE-PLANTING.

THE THERAPEUTIC GAZETTE is a welcome visitor to so many country firesides, and the subject of tree-planting is so closely connected with the health and prosperity of country districts, in which the medical man is looked up to as an authority upon all sorts of subjects, that we do not hesitate to occupy a few lines with calling attention of our readers to the importance of tree-culture in the United States. On the eastern and western edges of the continent nature has provided a sufficiency of forests, which are, however, in danger of rapid destruction through the hands of man. In the centre of the continent, where nature is at fault, man should reverse the process of destruction. In our opinion, neither preaching nor the hope of sanitary good, nor the love of the æsthetic, have sufficient power to move large bodies of men. The glitter of the guinea will, however, always draw, and it is therefore with great

pleasure that we read in *Science* of March 4 that the farmers of Massachusetts have learned that cultivated forests may yield a very profitable result, and that it has been demonstrated in Barnstable County, Mass., that a crop of pitch-pine can be raised from seed with as much certainty as a crop of corn, and with much less expense. In the barren, sandy, exhausted soils of Middleborough and Bridgewater white pine has been so successfully cultivated that farmers have sold logs at the rate of one hundred and fifty dollars an acre from seedlings set by themselves.

The National Agricultural Department ought to institute a series of experiments on a large scale to determine what species of trees can be most profitably cultivated in the various diverse climates of this country. Professor C. S. Sergeant, of Harvard College, states as a result of experience that he has entirely changed his opinions in regard to the comparative value of foreign and native trees. For years the imported trees were very largely planted out in New England, and at first grew rapidly and strongly, so that they were thought to be better than the native species; but all of them, as they approach maturity, cease growing, become decrepit, and fail to produce good timber. Perhaps from the list of foreign failures the willow should be excepted. Its value is not in affording timber but in producing wood adapted to peculiar purposes, such as charcoal and basket-making.

YELLOW FEVER INVESTIGATIONS.

BY the passage of the Sundry Civil Appropriation Bill, Congress has authorized the President to expend a sum not exceeding ten thousand dollars for the purpose of investigating the merits of the methods practised in Mexico and Brazil for preventing yellow fever by inoculation.

In such an inquiry everything depends upon the person selected. For the position Dr. Sternberg, of the United States army, is certainly prepared by his thorough training in bacteriology and by his having had yellow fever. Prof. John Guit  ras, of Charleston, a native of Cuba, well known by his acute articles upon tropical fevers, having had great clinical experience, speaking Spanish, and bearing about with him the immunity to yellow fever which belongs to his race, would

afford a complementary companion to Dr. Sternberg. We commend the pair most heartily to the notice of President Cleveland.

Reports on Therapeutic Progress.

MORPHINE IN DIABETES.

In the *Practitioner* for January, 1887, Dr. J. MITCHELL BRUCE publishes an account of a series of investigations which he has made as to the effects of the administration of morphine to cases of diabetes mellitus. These investigations of Dr. Bruce throw considerable light not only on the mode of action of morphine in diabetes but on the pathology of the disease itself. His method was first to ascertain the amount of sugar passed by the patient on an ordinary mixed diet; that is, allowing him to continue the same kind of food as he had been consuming when he was taken into the hospital. The patient was then placed on a strictly antidiabetic diet; having by this means reduced the sugar to something like a constant minimum, morphine was administered by the mouth, beginning with a moderate dose, and increasing the quantity by small increments as long as the glycosuria continued to yield to the drug and unpleasant symptoms were not developed, until if possible a still lower constant of sugar was reached. In this stage of the treatment hypodermic administration of the morphine was substituted for its exhibition by the mouth; thus serving to determine as to whether there was any difference in the effect of morphine on the amount of sugar passed in the urine, according as on the one hand it was allowed to pass through the liver entirely, or, on the other hand, it discharged into the general circulation, thus mainly escaping the hepatic system.

The conclusions which Dr. Bruce feels warranted in drawing from these observations he arranges under two heads.

I. *Therapeutical*.—There can be no question that in this case morphine was of value in the treatment of diabetes. Not only did the sugar disappear entirely under the use of the drug, but the patient's weight increased four and a half pounds during the first course of morphine by the mouth, and his personal condition, subjectively and objectively, was greatly improved. It is true the improvement was but temporary; but it would be equally correct to say that the benefit continued as long as the treatment was maintained. Dr. Bruce thinks that in the treat-

ment of diabetes morphine has suffered somewhat unfairly in reputation by comparison with codeine.

II. *Physiological and Pathological.*—1. In the case before us *the glycosuria was proved to be due to an increased income of sugar into the blood; not to diminished destruction of sugar in the system.* This conclusion was established by the fact that whilst the glycosuria was controlled by morphine, the drug had very much less influence on the disorder when it was thrown into the general circulation (where destruction of sugar is accomplished) than when it was introduced into the *portal* circulation.

2. In the present case *the increased income of sugar was proved not to originate in simple transportation of sugar from the intestine or portal vein to the general circulation.* When all saccharine and amylaceous materials had been removed from the diet, the patient continued to excrete as much as 1360 (later on, even 4000) grains of sugar per diem. It was clear, therefore, that glycogenesis was still active, and that the sugar was derived from the nitrogenous constituents of the food by some organ, whether the liver situated on the portal circulation, or the muscles and other viscera, situated on the general circulation.

3. *The excessive glycogenesis that was going on in this case was proved to be effected mainly or entirely in the liver, not in the muscles or any of the other viscera.* This conclusion followed from two facts: (1) that when the morphine was introduced into the liver by the portal vein, it reduced the sugar to *nil*, whilst it did not materially affect the other viscera, such as the central nervous system; and (2) that when it was introduced into the general circulation it diminished the amount of sugar excreted only to the degree that might have been anticipated from the portion that would reach the liver through the hepatic artery, whilst it markedly affected the other viscera, such as the central nervous system.

4th and lastly, these results appear to prove that in this instance, if the diabetes was of nervous origin (as it is believed to be in some cases) the seat of the disordered process was in the liver, not in the central nervous system or nerve-trunks. This conclusion again follows from the effect of morphine by the mouth as compared with its effect *sub cute*; for the subcutaneous method distinctly proved that whilst the central nervous system was profoundly depressed by morphine, there was but little effect on the glycosuria,—through this channel, probably *none*.

THE ANTISEPTIC TREATMENT OF SUMMER DIARRHŒA.

In the *New York Medical Journal* for January 29, 1887, DR. L. EMMETT HOLT publishes an elaborate paper on the antiseptic method of treatment of summer diarrhœa, from which he draws the following conclusions:

1. Summer diarrhœa is not to be regarded as a disease depending upon a single morbid agent.

2. The remote causes are many, and include heat, mode of feeding, surroundings, dentition, and many other factors.

3. The immediate cause is the putrefactive changes which take place in the stomach and bowels in food not digested, which changes are often begun outside the body.

4. These products may act as systemic poisons, or the particles may cause local irritation and inflammation of the intestine.

5. The diarrhœal discharges, *at the outset* at least, are to be looked upon as salutary.

6. The routine use of opium and astringents in these cases is not only useless, but, in the beginning particularly, they may do positive harm, since, by checking peristalsis, opium stops elimination and increases decomposition.

7. Dr. Holt does not deny nor undervalue opium in many other forms of diarrhœa than the one under discussion.

8. Evacuants are to be considered an essential part of the antiseptic treatment.

9. Experience thus far leads the author to regard naphthalin and the salts of salicylic acid as the most valuable antiseptics for the intestinal tract.

ANTIFEBRIN.

EISENHART, in the clinic of Ziemssen in Munich, has used antifebrin, and reports as follows: The number of cases observed was thirty. The doses given were from 4 to 8 grains, given in powder and solution, by rectal and anal use. In a case of erysipelas a dose of 8 grains was vomited when given by the mouth; when given by injection it was retained.

In general the drug was well borne; half of the patients had a profuse perspiration following, and an exanthem occurred in one case.

Cases of typhoid, treated with antifebrin, had an easy course. The influence of the drug was generally manifested two hours after it had been taken. After a dose of 4

grains the temperature sank six times from one-tenth to one degree, thirteen times from one to two degrees, fifteen times from two to three degrees, six times from three to four degrees, and three times more than four degrees. After a dose of 8 grains a depression of temperature of one-tenth to one degree occurred three times; from two to three degrees, seven times; from three to four degrees, twice; from three to more than four degrees, twice. In a few cases only was this effect wanting.

In comparison with antipyrin it was found that one-fourth as much antifebrin as antipyrin was required for a given effect. The conclusions of the observer were that in doses of 4 to 8 grains antifebrin was a very valuable febrifuge, reasonably certain of success. —*Deutsche Medicinal-Zeitung*, December 23, 1887.

THE DETECTION OF COCAINE IN THE ANIMAL BODY.

HELMSING, of Dorpat, has published a carefully-prepared pamphlet reporting his experiments on this subject, and his conclusions we find to be as follows:

The method employed in testing for cocaine was that of Dragendorff, and consisted essentially in acidulating the fluid containing the poison with sulphuric acid, and shaking the mixture with petroleum ether, benzine, and chloroform. The residue after each shaking was put in a watch-glass, and a drop of potassium iodide and picric acid added. The residue left after evaporating these mixtures gave no reaction for the alkaloid until it was rendered alkaline, when it was again shaken with the three volatile liquids, and evaporation again performed, when the residue gave with potassium iodide a brilliant red precipitate, and with picric acid a white precipitate.

Quantities of the alkaloid ranging from $\frac{1}{16}$ and $\frac{1}{32}$ of a grain were detected in urine; in blood the same amounts gave appreciable reactions; in food-stuffs, traces of the drug were found in the stomach after its administration.

Cocaine was found in the urine in the case of a cat to which $\frac{1}{4}$ of a grain of cocaine had been given. The same animal received $\frac{1}{2}$ of a grain, and both fæces and urine gave reactions for cocaine. A second animal which was made the subject of experiment showed the same reactions. An animal which was poisoned by $1\frac{1}{4}$ grains of the alkaloid passed urine and fæces twice, at intervals of twenty-six hours. In the excreta voided first well-

marked reaction for the poison was observed; in the second, no trace of the drug was found. In the case of another animal which was poisoned by the same dose, and voided urine in three portions, at intervals of nine and fifteen hours, the quantity of cocaine excreted steadily diminished until none could be detected. The following organs and tissues were examined in an animal poisoned by $\frac{1}{2}$ of a grain: heart and blood, lungs, spleen, liver, gall-bladder and bile, kidneys, stomach, small intestine, large intestine, brain, muscles, bladder with the urine. In the greater portion of these organs no cocaine could be found.

The dose was then increased to $4\frac{1}{2}$ grains in the case of another animal, and the potassium iodide test gave reactions for cocaine in all the organs examined. A fatal dose of $1\frac{1}{2}$ grains could be detected in but a portion of the organs after death. It is interesting to note that the largest dose given was discoverable in all the organs of the body, and the smaller dose of $1\frac{1}{2}$ grains was found only in the liver, bladder, and urine. The elimination of the poison begins in twelve minutes after taking, when it was found in the urine; the bowels share also in excreting it. The writer adds a full list of the reagents which act upon cocaine, and a description of its lethal effects.

A SPEEDY CURE OF WHOOPING-COUGH.

MOHN, a Norwegian physician, had in his own family a case of scarlatina and whooping-cough. After the violence of the scarlatinal attack had subsided, but while the whooping-cough was still present, Mohn disinfected the child's bedding with the fumes of sulphur. Just previous to the fumigation the child had a severe paroxysm of coughing, which led the father to hesitate in his employment of the sulphur. He was surprised and gratified, however, to observe that the disease was cured; and the patient's sister, who had a cough, the sequela of pertussis, was also cured. These children were not included in the fumigation intentionally, but inhaled such vapor as casually permeated their apartment.

In a subsequent severe case, the writer, after the failure of other means, had recourse again to inhalations of sulphur gas, with prompt success. He cites successful cases of five months in age, and children of varying ages have been cured in this manner. He proceeds as follows: The patients are dressed in clean linen, and taken from their bedroom to another room. In their absence bedding, fur-

niture, playthings, linen, clothing, everything which the sick-room contained is so arranged that the fumes of sulphur can penetrate to all. Six and a half drachms of sulphur per cubic metre of air-space in the room are burned, and the fumes allowed to permeate the room for five hours. At evening the child is taken back to the sick-room and put in a bed which was disinfected; it awakes the next morning cured.—*Revue Internationale*, No. 35.

GELSEMINUM ALKALOIDS.

In an elaborate paper Mr. F. A. THOMPSON describes (*Pharm. Era*, January, p. 3) two alkaloids obtained by him from gelsemium root, thus confirming so far Messrs. Ringer and Murrell's hypothesis that the root contained two alkaloids, one of them exercising a paralyzing and the other a tetanizing influence. The alkaloids were obtained by percolating the finely-powdered root mixed with freshly-slaked lime with alcohol, shaking the percolate with chloroform, and then treating the chloroform solution with water acidulated with sulphuric acid. The separation of the alkaloids is effected by the addition of hydrochloric acid, the hydrochlorate of one of them, which is crystalline, being insoluble, and that of the other, which is amorphous, being soluble in its own weight of water. The crystalline alkaloid, for which Mr. Thompson proposes to retain the name "gelsemine," gave upon analysis results corresponding with the formula $C_{24}H_{26}N_4O_{11}$, differing, therefore, considerably from that attributed by Mr. Gerrard to the alkaloid analyzed by him (*Pharm. Jour.*, 37, xiii. 641). The amorphous alkaloid has not yet been obtained sufficiently pure for analysis.—*The Pharmaceutical Journal and Transactions*, January 29, 1887.

THE SUBCUTANEOUS INJECTION OF THE YELLOW OXIDE OF MERCURY IN SYPHILIS.

SZADEK has made clinical studies with this mode of treatment in the clinic for dermatology at Kiew in the treatment of secondary syphilis. He made thirty-five injections in six patients, and selected the gluteal region, where he injected the drug deeply beneath the muscular fasciæ.

His formula was the following:

R Hydrarg. oxydat. flavi, gr. xv;
Gummi Arabici, gr. xx;
Aquæ destillatæ, ℥viiss. M.
Fiat emulso.

His conclusions from these observations were that (1) the local reaction was very little, even less than after the use of calomel; the patient generally complained of dull pain, which ceased in a few hours; the gluteal region was not tender on pressure in two or three days after injection; hemorrhage never followed these injections.

2. In no case did an abscess form, either at the point of injection or in its vicinity; generally a small amount of infiltration was observed; in one case only, on the third day after five injections, a painless node was felt in the muscle, which soon disappeared.

3. The examination of the urine showed, after each injection, the presence of mercury.—*Deutsche Medicinal-Zeitung*, January 10, 1887.

A NEW METHOD OF SEWER VENTILATION.

A new proposal has just been brought forward for the ventilation of sewers. It has the merit of originality and ingenuity. Mr. R. S. ASH has patented a system of ventilation by the force of concussions resulting from explosions automatically produced. In the man-hole of a sewer, or in the ventilating-shaft of a coal-mine, etc., he places a small cylinder where coal-gas accumulates till it reaches a little hole, and there comes in contact with a jet burning outside. An explosion results and the lid of the cylinder is blown off, but counter-weights make it fall back in its place, so that all is ready again for the next explosion. Of course the air is blown out of the man-hole, and a vacuum created and filled by the air rushing up from the sewer, but this displacement is not the principal merit of the process. A ventilating fan or revolving wheel and a furnace will equally produce a current of air; but such current generally travels down the central and main sewers, and leaves almost untouched the accumulations of foul gas in the branch sewers, in the angles, and in other inaccessible places. A shock, however, does not travel in a straight line, but spreads out in a circle. A stone thrown into a pool of water affords the readiest illustration of this fact. Let the edges of the pond be jagged and angular, the ripple will travel up every little crevice or opening in the banks. A current, on the other hand, even the current of a rapid stream, leaves quiet nooks made by the recesses of the embankment, where a boat may be safely moored without risk of its being borne away. Thus, an explosion in a

sewer will with more certainty move the air in the branch sewers and out-of-the-way passages than will a strong current down the main channel. Also it should be noted that it is precisely these branch pipes and sewers which are nearest to the inside of the dwelling, and therefore most urgently need ventilation. Consequently, if ventilation by concussion or explosion can be made to act without involving too great an inconvenience and expense, it is likely to prove as valuable a progress in practice as it is an advance in theory. —*The Lancet*, February 12, 1887.

ANTIPYRIN IN HEMICRANIA.

UNGAR, of Bonn, was led by the similarity of action of antipyrin with salicylate of sodium to try the former in hemicrania. He found that when given in the beginning of the attack or in the prodromal period the drug either wholly prevented an attack or made it very much milder. Patients who were generally not able to be about during an attack were able, after taking it, to maintain their usual avocations. When taken after the paroxysm of pain had fully established itself, it was still able to prevent a severe onset. Antipyrin is not, however, a reliable drug in all headaches. Patients were found upon whom it had no effect; it was more rarely found that the same patient was relieved on one occasion and not on another. A reason for this variation, and a means of recognizing it, the writer had not discovered. In cases which were relieved by antipyrin, for adults a dose of 15 grains, taken without repetition, was generally sufficient; rarely 23 grains were needed, and without repetition. The good results were generally manifested in an hour after taking; when this was not the case a similar dose was added, when in several cases the desired effect followed. Antipyrin was usually prescribed in capsules or wafers. —*Medicinisch-Chirurgische Rundschau*, February 1, 1887.

tion, and hemorrhagic endometritis, in which the drug was administered continuously, while in other cases of hemorrhage at the menstrual period he has administered it for ten days before and during this period. He has never used hydrastine and the other alkaloids through his want of confidence in the constancy of their strength.

His conclusions supplement the results of treatment by other writers. He finds that hydrastis checks the bleeding from uterine hemorrhage by the production, he believes, of persistent anæmia, unaccompanied by the distressing cramps or the flooding from the alternate contractions and relaxations so often produced by ergot. Its use is therefore preferable in the case of small fibroids, where their expulsion would probably be attended by hemorrhage or septicæmia. In fungous endometritis, even when curetting has failed to arrest the bleeding, he has obtained remarkable results from the use of hydrastis.

TESTS FOR THE PURITY OF COCAINE.

HARTGE gives the following as practical tests of the purity of cocaine:

1. When heated upon platinum it must disappear without residue.
2. Solutions of cocaine must be of neutral reaction.
3. Sulphuric acid, when added, should not discolor its solution.
4. When to a solution of cocaine, 1 to 200 or 1 to 500, one drop of a two per cent. solution of potass. permanganate is added, the liquid should become red but remain clear. If the permanganate is added in drops beyond this point, a red precipitate of cocaine will fall, which will become brown on heating, but will give no odor of bitter almonds.

The writer tested six samples of cocaine, finding only one pure. —*Der Pharmaceut.*, January 15, 1887.

HYOSCINE IN KIDNEY-DISEASES.

In the *Practitioner* for February, 1887, DR. NESTOR TIRARD reports the case of a man, aged 58, suffering from chronic kidney-disease, in whom obstinate sleeplessness formed one of the most rebellious symptoms. For a time this condition was relieved by moderate doses of chloral and bromide of potassium, but this combination gradually lost its effect. After a time the tincture of cannabis indica was employed, but the result was disappoint-

HYDRASTIS CANADENSIS IN UTERINE HEMORRHAGE.

DR. REYNOLD W. WILCOX reports in the *New York Medical Journal* for February 19, 1887, forty-three cases of various forms of uterine hemorrhage in which he has employed the fluid extract of hydrastis canadensis in doses of 20 drops three or four times a day in a wineglassful of water. The cases included cases of fibro-myomata, sub-involu-

ing; finally the hydriodate of hyoscine was employed in the strength of one grain to two hundred minims of distilled water, of which 2 minims were injected subcutaneously. This injection produced sleep, but constant wandering delirium, which increased with the repetition of the dose until the quantity was reduced one-half. The result was, then, that a quiet delirious condition came on almost invariably from ten to twenty minutes after the hypodermic injection and then passed on into sound sleep. Dr. Tirard notes, what seems to have been peculiar in his experience, that there was frequently dryness of the throat, and on one or two occasions the patient awoke with a feeling of nausea, which soon passed off. The pulse did not vary in volume, but always fell five beats or more after the injections. There was absolutely no interference with accommodation, no change in the size of the pupil, nor any marked change in reaction to light.

The conclusions which Dr. Tirard draws from the observations on this case are the following:

"Hydriodate of hyoscine is a drug which can be used with perfect safety in cases of kidney-disease where morphine is inadmissible. It is a drug which may give rest when other sedatives fail.

"If used in 2-minim doses subcutaneously it may give more satisfaction to the patient than to the attendants, since the unconsciousness may be accompanied by angry and combative delirium. Should this occur, it will probably be sufficient to diminish the amount employed.

"It is very rapid in its action, unconsciousness following in from ten to twenty minutes, and the after-effects are of a soothing character.

"Even when delirium is present in a violent form, it is followed by quiet sleep, and the patient, being unconscious, is much more refreshed than by a night of short snatches of sleep produced by chloral or bromide, and the result is a marked improvement in both aspect and temper. And, lastly, no irritation is produced around the site of injection."

NAPHTHALIN.

BORELIUS, of Upsala, gives the results of his clinical uses of naphthalin as follows: Following the advice of Rossbach, the drug was used in cases of chronic intestinal catarrh with good results when all other means of cure had failed. In abdominal typhus, even

when pushed to 4 scruples daily, no effects were obtained. The best results were gained in tuberculosis of the intestines. Three cases which had presented obstinate abdominal pain and severe general symptoms were relieved after taking naphthalin with powdered coffee four or five times daily in doses of 7 or 8 grains. The post-mortem examination in these cases showed the intestinal ulcers clean and in process of healing, and many of them already cicatrized. The urine was often colored darkly, but in one case only was dysuria observed, which became so severe that the drug was abandoned.—*Medicinisches-Chirurgische Rundschau*, January 1, 1887.

ABSORPTION FROM THE MUCOUS MEMBRANE OF THE URINARY BLADDER.

The question as to the occurrence of absorption through the mucous membrane of the urinary bladder has often been considered both at the bedside and in the laboratory, but the results have hitherto been sufficiently discrepant to leave room for more exact work on the subject. The latest contribution towards a solution of the problem bears the mark of exact scientific observation, and seems to us largely to settle the matter. In the current number of the *Journal of Anatomy and Physiology* there is a paper on "Absorption from the Mucous Membrane of the Urinary Bladder," by DR. HERBERT H. ASHDOWN, late senior demonstrator of physiology in the University of Edinburgh, in which a critical summary of the work already done is given, and a series of carefully-conducted experiments is reported. The observations were made on rabbits and dogs, and consisted essentially in the analysis of results obtained by the intravesical injection through the urethra of substances possessed of known physiological properties or readily estimated chemical reactions. The author divides his experiments into three groups: (1) Those in which the drugs administered have a sufficiently distinct physiological action of their own to indicate their presence when absorbed into the system. (2) Those in which the renal elimination of the drugs given can be readily demonstrated. (3) Those in which the quantitative analysis of a solution of known chemical composition can be conducted after it has remained for several hours in the bladder. The results of the triple series are strikingly similar, and appear to justify Dr. Ashdown's conclusions. These are: (1) That absorption of a very large series of chemical substances does take

place from the mucous membrane of the urinary bladder when in a perfectly healthy condition. (2) That the urinary constituents themselves—those substances eliminated by the kidney as effete products of the system—are absorbed from the bladder in varying proportions, this applying more especially to the water and urea, but also, though to a less extent, to the inorganic solids. (3) That the degree of distention of the bladder plays a most important part in increasing or diminishing the rapidity of such absorption. (4) That regular rhythmical contractions take place in the muscular wall of the bladder; that these contractions are largely influenced by the degree of distention of the bladder, being most marked with a moderate amount of distention of the viscus, and but feebly marked in slightly distended or in over-distended conditions; and that the character of these contractions is largely affected by the nature of the fluid contained in the bladder.—*The British Medical Journal*, February 12, 1887.

PYRIDIN IN ASTHMA AND OTHER DYSPNŒAS.

The clinical studies of KELEMIN, of Buda Pest, have given us the following information regarding this drug :

In both inspiratory and expiratory dyspnœa its use was constantly followed by success; subjective and objective symptoms were alike relieved. While the effects of the drug varied with the peculiarities of the patient, its use was peculiarly efficacious in pulmonary, cardiac, and renal asthma. The writer was almost led to consider it a specific in pulmonary and cardiac asthma.

The effect of the drug in the cases which showed emphysema endured from eight to twelve hours. The curative properties of pyridin are not yet established. In two cases where marked psychic disturbances followed the abuse of morphine and chloral, the patients were greatly benefited by this remedy. The interesting question arises whether pyridin can so alleviate dyspnœa that asthmatics may be freed from the necessity of using chloral and morphine; if this result be attained it will be truly valuable.—*Medicinisches Chirurgische Rundschau*, January 1, 1887.

DIGITALIN.

Whilst working out the toxicology of digitalin, M. LAFON has made the observation

(*Archives de Pharm.*, January, p. 32) that this glucoside is not acted upon by diastase, pepsin, gastric juice, pancreatic juice, bile, beer yeast, emulsin, or the putrefactive ferment. It is not, therefore, sensibly modified in the digestive canal, but it undergoes a profound alteration in the circulation, which is probably due to an oxidation process. It was also found that the detection of digitalin is not prevented by the action of alkalies, or that of sulphuric, phosphoric, or hydrochloric acids; nitric acid, on the other hand, appears to decompose it.—*The Pharmaceutical Journal and Transactions*, January 29, 1887.

COTTON-ROOT AS A UTERINE HÆMOSTATIC.

In a paper read by DR. HENRY GARRIGUES before the Medical and Surgical Society of German Physicians of New York, and published in the *New Yorker Medicinische Presse*, as reported by the *Pittsburg Medical Review*, January, 1887, Dr. Garrigues stated his experience with the cotton-root (*Gossypium herbaceum*), of which he has made very extensive trials in all forms of uterine hemorrhage during the last two years, and which, in his hands, has certainly proved remarkably successful.

He treated one hundred and thirty-nine patients afflicted with different forms of uterine diseases, in whom hemorrhage had been a very prominent symptom, with this drug, with the following results :

	Relieved.	Not relieved.
Anteflexion.....	33	2
Anteversion.....	1	...
Retroflexion.....	8	...
Retroversion.....	1	2
Prolapse of the uterus.....	1	...
Endometritis hyperplastica.....	3	1
Pelvic inflammations (perimetritis, pelvi-peritonitis, parametritis, oöphoritis, salpingitis).....	5	...
Subinvolution.....	2	...
Laceration of cervix.....	15	2
Mucous polypus.....	1	...
Fibroid.....	7	2
Sarcoma.....	1	...
Carcinoma.....	2	...
Following labor.....	3	...
Following abortion.....	3	...
Sanguineous leucorrhœa after menopause.....	1	...
Menorrhagia and metrorrhagia from unknown causes.....	38	5
	125	14

If the same patient presented different affections at the same time, viz., laceration of the

cervix, cellulitis, and flexion, she was only mentioned once, and that under the diagnosis which is the most frequent cause of hemorrhage,—e.g., in the case cited, under flexion.

When there were indications for other methods of treatment, these were fulfilled, viz., the polypus was removed; in case of ectropion of the cervical mucous membrane, injections with liq. ferri sesquichlor. (3ss to one pint of water) were ordered; in hyperplastic endometritis the curette was employed; malpositions were corrected and a pessary introduced; pelvic inflammations were treated with hot douches and glycerin tampons, and syphilis by specific medication.

Though this combined treatment was employed, he feels justified in drawing the same conclusions in regard to this root as a hæmostatic as he formerly did when using in its place fluid extract of ergot, fluid extract of viscum album, tincture of cannabis indica, tincture of capsicum, and bromide of potassium. Since he commenced to use the cotton-root he has always prescribed it first, and if it failed he has had recourse to the old remedies. In cases in which he could not detect any particular cause for the hemorrhage, he used cotton-root alone. He treated many other cases in hospital and private practice in the same way, of which he has, however, kept no record.

In the beginning he prescribed the fluid extract, but found it of very little benefit if not taken in very large doses, which were not tolerated well by the patients. These cases, however, were omitted in the above table, which has reference only to those treated by the drug in the form of a decoction. He directs to boil three large teaspoonfuls in a pint of water for fifteen minutes, then to strain it, and to drink it cold in three portions,—morning, noon, and night. This decoction has a red color, something like raspberry lemonade. It has an aromatic, slightly astringent taste, and is not unpleasant to take.

This decoction has tonic properties which are of value, as preparations of iron are contra-indicated until all tendency to bleeding has ceased. Patients should take it for months. During menstruation they should discontinue it for from two to four days, according to the amount of blood lost, when it should be resumed again. Like all other remedies, it is not a specific; in some patients it fails entirely, while other remedies, especially ergot, give relief; in other cases all hæmostatics are absolutely useless. He has found it, however,

preferable to all other remedies in the majority of cases. It seems to have a most remarkable effect in neoplasms; in fibroids it very often not only relieved the hemorrhages, but also the pains. Even in cases of cancer and sarcoma of the uterus, he found it very beneficial as a hæmostatic and tonic.

DESCRIPTION OF ANTIFEBRIN.

CAHN and HEPP, its discoverers, describe it to be acetanilide or phenylacetamide, with the formula $C_6H_5NHC_2H_5O$ (*Centralblatt für die Medicinischen Wissenschaften*, January 8, 1887). It is produced by the action of heat upon aniline acetate, one molecule of water being driven off. It is a white, crystalline, odorless powder, which burns the tongue slightly; is almost insoluble in cold water, requiring one hundred and sixty parts for its solution, sparingly soluble in hot water, and very soluble in alcohol and wines. It is of neutral reaction, and is very stable against most means of chemical reduction.

It melts at $113^{\circ} C.$, and volatilizes at $292^{\circ} C.$ In large doses it produced no ill effects upon animals, and did not influence the normal temperature.

It may be conveniently administered suspended in water, as it has no bad taste, but only a slight and not unpleasant sensation of burning, and patients evince no aversion to it, even after its administration for a long time.

The discoverers report their observations upon twenty-four patients with pyrexia, and draw the following conclusions:

The doses were from 4 to 8 grains. In single doses of considerable size the best effects were produced. In comparison with antipyrin the relative strength is four to one in favor of antifebrin.

The influence of the drug began in an hour, reached generally its maximum in about four hours, and was finished in from three to ten hours. The fall of temperature which occurred after its influence was established was marked by perspiration and reddening of the skin; the rise of temperature which followed was without chills, but often with a sensation of cold. The frequency of the pulse was diminished with the decreased temperature, and arterial tension was increased. Ill after-effects were not observed. In some cases, during the reduction of temperature, thirst, diuresis, and quiet sleep occurred.

Frequently cyanosis of the face and extremities was present, which began with the fall of temperature and ceased without being followed by a chill. Antifebrin gave prompt and satisfactory results in acute joint-rheumatism.

According to an analysis of some more recent studies by the same authors published in the *British Medical Journal* for February 12, 1887, it is four times as strong as antipyrin in its effects, is very cheap, does not cause vomiting, and rarely causes any rigors, as the temperature subsequently rises again. Moreover, it causes no cerebral disturbance, and the appetite even improves under its use. In a few cases, some degree of cyanosis of the face and limbs was observed; this, however, always disappeared (without any symptoms of shivering as it faded off), and the authors paid very little attention to it. Indeed, they complain that certain remarks in some chemical advertisements have been exaggerated in this particular, in order to favor the sale of antipyrin, and distinctly state that the above appearance was not more frequently observed than after other antifebrile agents, far less than after kairin. To call it "aniline-poisoning," as has been done, is quite unjust.

The drug was used in twenty-four cases of fever, and always lowered the temperature: 15 grains given in the morning is the favorite daily dose with Drs. Cahn and Hepp. The temperature began to fall in about an hour, and continued to fall for about three hours longer; it then gradually rose again; as the temperature fell, the skin reddened, and there was perspiration; the pulse became less frequent, and the arterial tension was increased. In some cases, during the period of intermission, there was much thirst, followed by increased urination and gentle sleep.

A further series of cases, sixty in number, included twenty-nine of typhoid fever, six of erysipelas, two of croupous pneumonia, four of acute rheumatism, six of phthisis, two of pleurisy, two of pyæmia, and two of septicæmia. Liebermeister has taught us that quinine is more energetic in its effects if given coincidentally with the natural daily remission in fevers, and this is also the case with antifebrin. A dose given early in the day has a far more potent effect than if given in the evening. A good dose at one time is far better than small doses frequently repeated, and in high fever the latter treatment is useless at first. But, if the temperature be brought to the normal by a good daily dose (15 grains) for two or three days consecutively, it will

be found that small doses of 2 or 3 grains daily will often suffice to keep it low afterwards.

As to the limit permissible, the authors themselves repeatedly took 1 or 2 grammes a day without the least effect; and one young man, who was suffering from diarrhœa, took 3 grammes (46 grains) daily for a week without the least discomfort. Indeed, Fürbringer and Reise raised the dose boldly to over 90 grains daily without harm,—a dose certainly equivalent to 5 drachms of antipyrin. Thus there is no cause for disquietude with the moderate doses recommended, but it is always advisable to study the individual susceptibility.

But one of the chief advantages of antifebrin over antipyrin is the freedom from vomiting after it, and patients who usually had retching, or even vomiting attacks, after antipyrin, took antifebrin without any discomfort. No irritation of the urinary passages was observed. In some cases of albuminuria, the albumen disappeared during the use of the drug; in others, not till the patient was free from fever. Again, shivering was rarely seen after antifebrin, whereas it is a common result after antipyrin.

The patients feel much better after antifebrin, and the mind is cleared to a remarkable extent. This is best noticed in typhoid cases.

Another advantage of antifebrin is the rise of arterial tension, together with lessened frequency of the pulse. Even when directly injected into the veins of animals, antifebrin never causes lowering of the arterial tension. This was established by experiments in Professor Schmiedeberg's laboratory. At the same time the increased diuresis caused by antifebrin is distinct evidence of its favorable effect upon the circulation.

No specific action of this drug is claimed as against any disease in particular; the chief experiences of Cahn and Hepp related to typhoid.

From all this it appears that, as said above, antifebrin is evidently a powerful antifebrile agent worthy of further trial. It is no doubt unfortunately true that the action of these aniline derivatives is of a more or less evanescent character, but this may be compensated to a great extent by giving them in appropriate repeated doses. It may be added that Lépine (*Semaine Médicale*, 1886, p. 473) calls this agent a "nervine," and finds that it relieves the peculiar pains common to "tabid" subjects.

ALKALOIDS OF *BERBERIS VULGARIS*.

A contribution towards clearing up the confusion concerning the berberis alkaloids has been made by DR. O. HESSE (*Berichte*, xix. 3190). Dr. Hesse states that in the root of the *Berberis vulgaris* berbine is accompanied by at least four other alkaloids. Upon treating a mother-liquor of berbine hydrochlorate with soda, a dark-colored precipitate is thrown down, from which ether removes not only oxyacanthine, as stated by Wecker, but at least two other alkaloids, whilst another brown-colored amorphous base remains undissolved. The oxyacanthine may be obtained as sulphate by dissolving the mixture taken up by ether in acetic acid and adding sodium sulphate to the solution. By treating the mother-liquor with sodium nitrate another alkaloid can be separated that has been named "berbamine," whilst the third alkaloid is thrown down by excess of ammonia. Oxyacanthine presents the peculiarity of having two widely separated melting-points; when precipitated by ammonia from an aqueous solution of the hydrochlorate as sulphate it forms a white, flocculent mass, which loses water at 100° C. and melts between 138° and 150° C., but when crystallized from ether it forms anhydrous needles that melt first between 208° and 214° C. It forms well-crystallized salts with acids, and its composition is represented by the formula $C_{18}H_{15}NO_3$. In the presence of caustic alkali oxyacanthine readily undergoes modification to β -oxyacanthine, which is no longer soluble in ether, and which probably differs in the fixation of the elements of a molecule of water, but on treatment with hydrochloric acid the water appears to be separated again, normal hydrochlorate of oxyacanthine being formed. In this respect the alkaloid presents some resemblance to narcotine. Berbamine is also represented by the formula $C_{18}H_{15}NO_3$.—*The Pharmaceutical Journal and Transactions*, January 29, 1887.

RESEARCHES UPON THE DIGESTION OF ALCOHOL.

GLUZINSKI, of Krakau, reports the following results from his experiments upon the digestion of alcohol:

It disappears rapidly from the stomach.

Aldehyd cannot be detected, and most probably alcohol is absorbed as such into the circulation.

The digestion is divided, when alcohol is taken, into two phases,—that occurring in the presence of alcohol; that which takes place

after its absorption. The first period is marked by a somewhat retarded digestion of albuminates; the second exhibits the secretion of a large amount of fluid containing an abundance of hydrochloric acid. The mechanical power of the stomach is moderately increased.

The secretion of gastric juice continues after active digestion has ceased longer with than without the use of alcohol.

Under the influence of alcohol large quantities of fluid are collected in the stomach, which become tinged with bile. Comparison of digestion when alcohol is used as an aid to the digestion of considerable quantities of food and when it is not used, shows that small doses improve digestion. The explanation of this fact lies in the large quantity of hydrochloric acid which is secreted after the absorption of the alcohol, which results in the digestion of large amounts of albumen which remain. The retardation of the secretion of the first period endures much too short a time, after the use of small quantities of alcohol, to be of importance.

The diminution of the mechanical activity of the stomach is much too small to be of moment. When, however, large quantities are taken, the result is different; for example, one hundred cubic centimetres of twenty-five per cent. alcohol is absorbed from the stomach in fifteen minutes; but with much larger amounts the movements of the stomach are hindered, food remains longer in the stomach, and the rapidity of digestion is much retarded. The administration of alcohol before food results in favor of digestion, from the fact that the acid resulting from the effect of the stimulus is an aid in digestion.

In cases alike of lessened and increased formation of acid the use of strongly alcoholic drinks is prejudicial, from the fact that diminished secretion will be still further lessened and increased formation of acid still more increased. When, however, the condition of the patient demands a nervous excitant, alcohol should be given before meals.—*Deutsche Med. Zeit.*, Jan. 3, 1887.

DIAGNOSIS OF GASTRIC DISEASE.

ZWEIFEL, of Zürich, has reached the following conclusions from clinical studies:

Delay in digestion is a symptom of gastric disease, most pronounced in dilatation and cancer, least in chronic catarrh, slightly developed in ulcer of the stomach.

In gastric ulcer, with extensive and recent destruction of mucous membrane, the period of absorption is much lengthened; in cancer of the cardiac portion it is much shorter than when the cancer is at the pylorus.

When absorption from a fasting stomach lasts more than twenty minutes, dilatation or cancer of the pylorus, or possibly both, are present if the presence of extensive and recent ulceration is excluded. When by distending the stomach, or examination with a sound, it is proven that dilatation is not present, pyloric cancer is probable.

A differential diagnosis between carcinoma and simple ulcer can hardly be made from the single symptom of delayed absorption. When dilatation exists, delayed absorption will not show the presence of cancer, but the presence of a tumor; general cachexia and the absence of free hydrochloric acid are needed to complete a diagnosis.

A differential diagnosis between gastric catarrh and ulcer is not possible from the condition of absorption alone.

In diseased stomachs the difference in the rate of absorption between filled and empty stomachs, and in the same individual on different days, is less than in healthy subjects.

Gastric ulcer and dilatation can be so successfully treated that a normal power of absorption is established.—*Deutsche Med. Zeit.*, Jan. 3, 1887.

THE ACIDS OF HEALTHY AND DISEASED STOMACHS.

CAHN and MERING have made the following observations:

It is possible to estimate quantitatively the amounts of lactic and hydrochloric acids in the same stomach.

In normal cases we find a half-hour after the ingestion of food a certain amount of hydrochloric acid.

With purely meat diet hydrochloric acid only is present.

The stomachs of healthy and diseased persons contain, when mixed diet is taken, in addition to hydrochloric acid, considerable quantities of fermentation acids and mixed acids, and these quantities increase the longer the food remains in the stomach.

In fever and severe anæmia hydrochloric acid may be absent.

In amyloid cachexia hydrochloric acid is generally present.

In cancer of the pylorus the presence of

hydrochloric acid is the rule, its absence the exception; it is present, not in traces, but in considerable amounts.

Methyl-anilin-violet is colored blue by the hydrochloric acid of the stomach, and is a test for its presence.—*Deutsche Med. Zeitung*, Jan. 3, 1887.

INTRA-PULMONARY INJECTIONS.

DR. ARTHUR RANSOME publishes in the *Medical Chronicle* for January, 1887, the account of one case of gangrene of the lungs and four phthisical cases which were treated by intra-pulmonary injections. The one case in which the treatment was thoroughly carried out was that of gangrene of the lungs occurring in a woman, aged 33, in whom gangrene followed an attack of acute pneumonia. The diagnosis was readily made that the case was one of gangrene of the right base of the lung, with a cavity upon the left side due to bronchiectasis. The patient was ordered iron and quinine, and inhalations of carbolic acid through hot water, with eucalyptus oil on a respirator inhaler. These means somewhat diminished the fetid odor of the breath and the sputum, and two days later 10 minims of an ethereal solution of iodoform—1 grain in 5 minims—were injected into the cavity on the right side, and a similar injection was made daily into this cavity, except upon two days, when it was injected into the left cavity, where it caused much more pain than upon the right. After two days of this treatment it was noticed that the sputum had lost its prune-juice color, and was less offensive, and the patient felt better, but the cough and amount of muco-purulent expectoration remained excessive. Subsequently an emulsion of iodoform in olive oil was employed as an injection, with much less pain to the patient, and this treatment was continued, with intervals of a few days, for several weeks, during which time she gained about ten pounds in weight and improved greatly in general health; even the bronchiectasis disappeared; and, though the cavity in the right lung was still perceptible, the patient, at the date reported, had no cough, no expectoration, and appeared to be in good health.

The injections were made by inserting a long needle between the ribs, near the upper margins of the lower one. Care was taken to ascertain if the end of the needle had reached the cavity, or, at any rate, an air-space, by withdrawing the piston, and, unless air bub-

bled through the fluid, the needle was moved slightly, until this sign of having penetrated into the air-channels was observed.

In the treatment of the cases of phthisis some good effect was temporarily produced in two cases; but, on the whole, the results were not encouraging. Apart from the danger of accident, such as hemorrhage or pneumothorax, the procedure is somewhat alarming and disagreeable to the patient. The ethereal solution was very painful, and the olive-oil emulsion was so viscid that a larger needle had to be used than was absolutely safe.

The solution of iodoform in oil of eucalyptus was the most satisfactory of all the mixtures that were tried.

THE USE OF SPLEEN-PULP IN ANÆMIA.

MARAGLIANO has reported the results of his experiments with spleen-pulp in cases of impoverished blood and the conditions depending upon it. The pulp was given with an emulsion of bitter almonds in accordance with the following formula:

R Emuls. amygd. amar., ℥x;
Pulpæ splenicæ, ℥iv;
Spt. vini gallici (cognac), ℥ii.

This amount was given in twenty-four hours with meals. The diet consisted of soup with rice, or bread, at eight o'clock in the morning; a second soup, with four ounces of meat and bread, with a glass of wine, at noon; and a third soup at six in the evening. Five cases of chlorosis were treated in this manner, with the result, in from eight to twenty-five days, as follows: increase of general strength, increase of red blood-corpuscles; rapidly restored functional activity of the nervous, digestive, circulatory, and urinary mechanisms; increase of arterial tension and body-weight. The number of cases is manifestly too small for accurate results, but sufficiently large to awaken interest in the mode of treatment.—*Deutsche Medicinal-Zeitung*, January 3, 1887.

AN EXPERIMENTAL RESEARCH UPON RABIES.

At a meeting of the Philadelphia Academy of Surgery, held February 7, 1887, DR. HAROLD C. ERNST, of Boston, read a paper on the above subject (*Medical Times*, February 19, 1887).

His experiments were performed with three objects in view: first, to determine whether or not there was such a thing as a virus of rabies; secondly, if there is such a virus, does drying at an even temperature modify its strength? thirdly, does the inoculation of such modified virus afford immunity against the inoculation of a stronger virus?

The different series of experiments relating to these various points were then given in detail. The animals used in most of the experiments were rabbits, although guinea-pigs and dogs were also employed.

The following conclusions were reached:

1. That there exists in the cords and brains of animals inoculated in Pasteur's laboratory a *specific virus* capable of the production of similar symptoms through a long series of animals.

2. That these symptoms are produced with absolute certainty when the method of inoculation is by trephining the skull and injection under the dura mater; with less certainty when the inoculation is by subcutaneous injection.

3. That the strength of this virus is lessened when the cords containing it are removed from the animals and placed in a dry atmosphere at an even temperature.

4. That the symptoms produced by the inoculation of this virus only appear at a certain period of incubation, distinctly shorter when the inoculation has been done by trephining than when done by subcutaneous injection.

5. That injections of the virus modified in strength by drying, and in the manner prescribed by Pasteur, exert a very marked protective influence against an inoculation with virus of full strength.

6. That a very moderate degree of heat destroys the power of the virus entirely, whilst prolonged freezing does not injure it.

AN UNUSUAL CASE OF ACUTE INTOXICATION FROM MORPHINE.

SCHEIBER, in the November meeting of the Society of Physicians of Budapest, reported the following interesting case:

A neurotic woman, aged 54, suffering from a severe neuralgia, was given in three days' time $\frac{1}{10}$ of a grain of morphine hypodermically. After taking the last injection she passed into a deep sleep, which persisted forty-eight hours, during which she exhibited the following symptoms of severe morphine intoxication: convulsive movements and cy-

anosis in the face, dry tongue, loud tracheal râles, dyspnoea, perspiration, incontinence of urine and of faeces, subnormal temperature. The patient recovered in the main in three days, but exhibited for six weeks the following symptoms: aphasia, agraphia, alexia; a small bed-sore upon the buttock, and a small dry crust upon the right heel; entire amnesia; disturbances of mind, which showed themselves in irritability, childish movements, and deceptions of the senses.

The neuralgia of the right lower extremity disappeared, as did the most prominent nervous disturbances after galvanization of eight days. Scheiber attributes the symptoms in the case to acute morphine intoxication followed by profound disturbance of nutrition, and well-marked cerebral hyperaemia and capillary apoplexy.—*Centralblatt für Nervenerkrankunde*, January, 1887, No. 1.

RECTAL INJECTION OF GASES IN DISEASES OF THE LUNGS.

The Paris correspondent of the *British Medical Journal*, February 12, 1887, writes that at a recent meeting of the Biological Society, M. MOREL commented on M. Peyrou's experiments on the effects of the rectal injection of sulphuretted hydrogen in dogs, and compared the doses with those employed in the treatment of tuberculosis. One hundred and fifty cubic centimetres of a saturated solution of sulphuretted hydrogen were injected in two doses at intervals of three minutes. Symptoms of poisoning began to be manifested within two minutes, and death took place in ten minutes. Another dog died quickly after two injections of the same strength, given at intervals of twelve minutes, while two others, in whom only very small quantities of the gas, or large quantities very much diluted, had been injected, experienced only slight inconvenience, and rapidly recovered. M. Peyrou concludes that sulphuretted hydrogen is harmless only when injected in small doses. With regard to these experiments, M. Morel observed that the quantities injected were enormous, being ten or fifteen times as great as those employed in man; and, supposing the dog to be four times lighter than man, the dose injected in the dog was really forty or fifty times as great as that employed in man. M. Morel then described in detail the mode of proceeding in the treatment of tuberculosis. The patient should be placed on his back in a position to

allow free expansion of the intestines, and the operator must carefully note any resistance to the entry of the gas, so as to allow absorption to take place during the operation. The breathing should be watched, especially when the pulmonary lesions are extensive, as any deficiency in respiration will make the elimination of the gas correspondingly difficult. Moreover, the substance used in the above experiments on the dog is not the same as that employed in pulmonary affections. In the latter case, the gas which is injected is a mixture of carbonic acid and sulphuretted hydrogen, and possesses properties very different from those of sulphuretted hydrogen alone. When intestinal irritation takes place, it is because the gases are not properly mixed. M. Peyrou injected into the dog twenty-five, thirty-five, ninety, and even one hundred cubic centimetres of sulphuretted hydrogen dissolved in a considerable quantity of water. In man, the quantity injected is not more than twenty-five cubic centimetres. M. Morel then described an apparatus for making these injections, the chief objects aimed at in its construction being to prevent any atmospheric air from mingling with the sulphuretted hydrogen and carbonic acid, to moisten the gaseous mixture, and to prevent too great distention of the intestine.

LEAD-POISONING FROM CHOCOLATE WRAPPED IN TIN-FOIL.

JOHANSON, of St. Petersburg, writes of the frequent use of tin-foil as a wrapper for chocolate, cheese, tea, tobacco, and other articles, and refers to cases already in print in which poisoning from the lead contained had occurred. The need for sanitary inspection and regulation in the sale of such articles is evident.

A certain per cent. of lead in tin-foil is recognized as permissible, according to Hegar 6.6 per cent., while others give fourteen per cent., while an overweight of tin will cause lead to be absorbed by the material which is enclosed by the foil. In these cases paper is generally interposed between the foil and its contents.

Johanson took three samples of chocolate from St. Petersburg manufactories, two of which were carefully separated from the foil by paper, and examined the chocolate by boiling one gramme with diluted nitric acid, and treating the filtrate with sulphuric acid and alcohol, when the lead present was pre-

cipitated. The two packages of chocolate wrapped in paper as well as in foil gave an amount of lead sulphate equal to 94.1 per cent. and 94.6 per cent. of the metallic lead; the chocolate wrapped in tin-foil only gave .7 per cent. of lead. As all three packages came from the same factory, it was evident that the dealer had purposely separated the cheaper foil from the chocolate by paper.

The use of paper is not a sure protection, however, for chocolate is seldom free from water, and when kept for some time the water may penetrate the paper, and oxidation, the formation of salts, solution and the deposition of lead in the material enclosed follow.—*Pharmaceutische Zeitschrift für Russland*, Jan. 11, 1887.

TRANSPLANTATION OF TENDON FROM ANIMAL TO MAN.

The Paris correspondent of the *British Medical Journal*, February 12, 1887, refers to a note by M. PEYROT on the transplantation of tendon from an animal to man. The patient, a boy, aged 14, entered the Hôtel Dieu in October, 1885. Six months previous to that date, he had received a wound on the palmar aspect of the first phalanx of the left middle finger, near the groove between the first and second phalanx. The flexor tendons were completely divided, and the finger was forcibly drawn back by the extensors. Simple suture of the two ends was out of the question, on account of the great length of time that had elapsed since the infliction of the injury. On October 30 an incision was made over the first phalanx in its palmar aspect, extending into the palm of the hand for a distance of about four centimetres. The ends of the tendon having been found with some difficulty, a piece of flexor-tendon thirty-three millimetres in length was taken from the hind paw of a young dog, and united to the vitalized ends of the divided tendon by three stitches of catgut. The incision itself was brought together by two rows of stitches; a deep one, near the transplanted tendon, in order to form a sheath, and a superficial one, in the skin. The operation was done with the most minute antiseptic precautions. When the first dressing was removed, ten days after the operation, it was found that there had been no suppuration; but unfortunately union had not taken place. There was, however, no sloughing, and the wound healed well. When the patient left the hospital on January 4, 1886, he had regained the use of all the fingers of the injured hand,

though the movements were still feeble. In a similar case in a child aged 2½ years, the transplanted tendon (the tendo Achillis of a cat) was completely eliminated three weeks after the operation. M. Peyrot considers that, as a general rule, transplantation should be had recourse to only in cases of real loss of substance, or when the length of time which has elapsed since the injury has produced a definitive separation of the two ends of the tendon.

THE THERAPEUTIC VALUE OF TINCTURE OF CANNABIS INDICA IN THE TREATMENT OF SUBACUTE AND CHRONIC DYSENTERY.

In the *Indian Medical Gazette* for December, 1886, MR. S. J. RENNIE reports four cases of dysentery, the first three being subacute and chronic, and the last of the acute form, in which cure resulted from the administration of tincture of cannabis indica, even after ipecac with opium, Dover's powder, nitrate of silver injections, and various other modes of treatment had failed.

Mr. Rennie first tried the officinal tincture in doses of 20 minims three times daily, but he has since found that this dose sometimes produced slight toxic symptoms, and he has consequently reduced the quantity to 15 minims, and prescribes it according to the following formula:

R Tinct. cannabis indicæ, ℥xv;
Bismuth. subcarb., gr. v;
Mucilag. acac., ℥ss.
Misce, et adde
Tinct. zingiberis, ℥xx;
Tinct. carda. co., ℥xx;
Spt. chloroform., ℥xx;
Aqua cinnamom., ad ʒi ter die sum.

Even in these doses it is necessary sometimes to order it to be taken after meals, as it occasionally produces vertigo. It is pleasant to take, and there is no subsequent nausea. The administration requires to be kept up for several days after all symptoms have ceased.

PERSISTENT VOMITING AS A CAUSE OF EAR-TROUBLES.

Vomiting is not usually included in the list of causes which occasion catarrh of the middle ear. It is well known that aural affections frequently complicate general wasting diseases, especially in their final stages. The pharyngeal muscles waste along with the body, and the sufferer's last days are aggra-

vated by distressing tinnitus and vocal reverberation. Whenever any movement occurs in the throat, nose, or mouth, the sound is conveyed to the tympanum up the unduly patent Eustachian tube, causing an unnatural ringing and roaring noise in the ear. Added to this cause, MR. CHARLES ATKIN (*British Medical Journal*, February 12, 1887) suggests that while undue patency of the Eustachian tube will in many cases account for the symptoms complained of, the impaction of minute particles of regurgitated food or mucus in the tubes during the act of vomiting may also serve to produce aural complications. In the simple act of vomiting the contents of the stomach are not unfrequently ejected from the nostrils, and the tubal orifices may easily become plugged. Should the act be repeated constantly, as often happens in all renal and cerebral affections, the plug may be driven still farther up, until it becomes lodged at the narrowest part, at the junction of the cartilaginous portions with the bony part of the tube.

Mr. Atkin reports two cases in which such a complication occurred. The right ear, and then the left, became successively affected through the plugging of the tubes.

SURGICAL TREATMENT OF HYDATIDS OF THE LIVER.

At a recent meeting of the Royal Medical and Chirurgical Society MR. RICHARD BARWELL read a paper on widely incising, by a two-stage method, hydatids of the liver (*Lancet*, January 29, 1887). Hydatids of the liver may be treated surgically by (1) puncture with a small trocar, (2) evacuation with a large persistent opening, and (3) electrolysis. This last has not commended itself to the judgment of the profession. The author recommends that the first method should always be primarily resorted to, chiefly because it sometimes is curative,—viz., in cases of single barren cyst; but in a large proportion of cases there are numerous daughter or secondary cysts, and then the tumors frequently recur. Under such circumstances the most efficacious treatment is by keeping a large opening patent for some time. The object of the paper was to point out the safest way of making such an opening. After discussing certain other methods, it was shown that incising the abdominal parietes first, then stitching to them the cyst or its surroundings, and finally cutting into the tumor after a few days,

was regarded as a very safe and efficacious procedure. The author recommended certain precautions to be taken when the cyst-wall appeared so thin that a needle-puncture might cause effusion of hydatid fluid into the peritoneum. Some modifications introduced with a view to meet special circumstances were discussed. The case of a young woman who had a hydatid of the liver which had been punctured eight times, and on whom the author performed the above-mentioned operation, was related. After a time eighteen hydatids and the wall of a large mother-cyst were passed from the wound. There was an absence of peritoneal symptoms, and the patient made an easy recovery.

MR. W. HAWARD considered that the character of the contents of the hydatid cysts should determine the nature of the operation. Doubtless a free opening would be required if the contents were thick and compounded of daughter-cysts. He criticised Mr. Barwell's method, and thought that the potassa fusa caustic was to be selected, rather than the one which Mr. Barwell advised. His remarks were illustrated by cases. In one instance a second cyst was found bulging into the first, which had been emptied. The second one was also opened through the first, but still the patient did not recover, and finally died with lardaceous disease. Hydatids were found in the omentum and spleen, and a suppurating cyst in the back of the liver, which was doubtless the cause of the continued illness and lardaceous disease. Altogether the method of gradual perforation of the abdominal wall, so as to secure proper peritoneal adhesions, was to be preferred to other methods.

MR. HOWARD MARSH had successfully practised the operation recommended by Mr. Barwell in one case recently. The sutures had to be passed into the substance of the liver because the hepatic peritoneum was so thin. The suppurating hydatid cyst was incised four days afterwards. In a case of suppurating hydatid cysts of the liver in a little child, an abdominal section was made without attempting to secure adhesion between the liver and abdominal wall. The result was satisfactory, and the case not complicated by the extravasation of the contents of the cysts into the peritoneal cavity.

MR. HARRISON CRIPPS considered that the free incision enabled the surgeon to deal with multiple cysts, which, in his experience, were frequent complications of hydatids of the liver. A case illustrating the advantage of a

free incision was mentioned. In this instance special precautions with a view to obtaining adhesions were not used. A second cyst was completely emptied through the wall of the first cyst, which had also been completely evacuated. The results were perfectly satisfactory.

SIR DYCE DUCKWORTH had seen good results after all the methods of treatment for hepatic hydatids. He was doubtful of the excellency of the advice that all the contents of the cyst should be evacuated at the surgical operation. It was still a point for the surgeons to decide whether the cysts should be completely cleared out, and whether anti-septic injections should be practised.

MR. WALSHAM remarked that surgical treatment of hydatid cysts was not always of a harmless nature. A few cases of sudden death, even from aspiration, had been recorded. Perhaps this was due sometimes to hydatid fluid escaping into the venous circulation. He could not but think that an incision four inches long would be attended with some danger. In several cases of the kind he had made the incision from an inch to an inch and a half in length, and found this size ample for all purposes. There was but little fear of pus or hydatid fluid escaping into the peritoneal cavity, and he thought that excellent results could be obtained without the surgeon first endeavoring to secure adhesions of the cyst to the abdominal wall. After evacuation of the contents the cysts should be well syringed with carbolic acid solution, and then powdered by iodoform. In his own practice the wounds healed under this treatment with the best possible results.

DR. ANGEL MONEY said that a continental surgeon was operating by abdominal section on a case of hydatid of the liver when the patient suddenly fainted and died. A daughter-cyst must have escaped from the liver and entered into the hepatic vein, for one was found free in the right auricle of the heart.

MR. A. PEARCE GOULD thought that aspiration should be tried first in all cases. It was still an open question as to what was the best means to be adopted even in aspiration. Should the surgeon remove all the hydatid fluid obtainable, or only a small quantity? Perhaps the latter method was the safer. In one case that had been under the care of Dr. C. Y. Biss, in a woman aged 40, Mr. Gould made an incision through the right linea semilunaris, when peritoneal adhesions were found, and four quarts of pus and hydatid cysts evacuated. The patient began retching, and the

omentum protruded at the lower part of the wound. In the omentum abortive hydatid cysts were seen, but the omentum was easily returned and the sinus eventually closed. In a second case there was a very large hepatic tumor, from which reddish serous fluid, without hooklets, was drawn off. After incision two pints of fluid flowed out, and a large quantity of solid material was discovered. Some days later much of this material was scraped away, and some bleeding resulted. The case had now almost completely recovered. He was strongly in favor of the knife as against caustics. He did not think it was necessary to stitch the wall of the cyst to the abdominal wall before opening the tumor.

MR. HENRY MORRIS supposed that the chief point for discussion in the paper was the necessity or not of a double operation. In a work of Dr. W. Thompson, published in 1841, on diseases of the liver and biliary passages, four methods of treatment were fairly stated. Some quotations were made by Mr. Morris from an article published in the *Madras Quarterly Medical Journal* for 1839 by an Indian surgeon, in which the opinion was expressed that there was not much danger of effusion into the peritoneal cavity in opening abscesses of the liver. The plan of attaching the cyst to the abdominal wall was perhaps associated with that of gastrostomy and colotomy, but the procedures in the three cases were altogether different; for in the two latter operations a mobile and contracting organ had to be dealt with. In hydatids of the liver it was necessary to obtain a sufficiently large opening to allow of the escape of bulky contents. It was not difficult to secure coaptation of the cyst to the abdominal wall, and thus to prevent the escape of fluid into the peritoneum. Manipulations were also possible by which this coaptation could be secured at the time of operation. He thought that there was no necessity for a division of the operation into two stages. He could not think the procedure of Mr. Harrison Cripps—of removing the entire mother-sac—an advisable one. Once, when tempted to perform this, he had in his recollection the case recorded by Dr. Bright, in which the stripping of the parent membrane from the adventitious coat was followed by hemorrhage that nothing succeeded in stopping. Once also a boy was run over and died. It was found at the necropsy that a hydatid cyst of the liver had become detached from its adventitious capsule, with consequent fatal extravasation of blood between the true and

the false sac of the hydatid. The surgeon should, in his opinion, empty as much of the fluid and daughter-cysts as would come away without using force, but he should not attempt to remove the parent sac at the time of operation. He had never resorted to irrigation, but aseptic drainage-tubes should be used. The indiscriminate use of iodoform in the cyst might be followed by disagreeable delirium, and perhaps even death.

MR. BARWELL said that he could supply the sequel to the case narrated in the paper. A small but long sinus persisted for some time, but had recently completely healed. He had a dread of filling a large cavity with iodoform; symptoms of blood-poisoning had been known to occur after such free dressings with this powerful antiseptic.

COCAINE COTTON.

MR. K. ELLER describes in the *Druggists Circular* for December, 1886, a very easy, neat, and successful way whereby to obtain the effect of cocaine by combining it with absorbent cotton. As thus prepared, it may be applied in a variety of ways to assuage pain and bring relief to those suffering. It requires the suggestion merely in order to insure its ready preparation by an ordinarily skilful pharmacist; for instance, a given weight of absorbent cotton, a certain quantity of solution of cocaine of definite strength, and the requisite skill, and a cocaine cotton of exact cocaine value will be the result. A three per cent. solution of cocaine is a good average strength to work with, and on this basis the following formulæ are suggested, unless an exception be noted:

COCAINE COTTON.

Solution cocaine, 3 per cent., \mathfrak{z} i;
Absorbent cotton, \mathfrak{z} i.

Thoroughly saturate the cotton, carefully dry same in a current of warm air, and card the cotton to restore it to its former appearance.

COCAINE COTTON WITH MORPHINE.

(For toothache.)

Solution cocaine, 3 per cent., \mathfrak{z} i;
Sulphate of morphine, gr. xii;
Absorbent cotton, \mathfrak{z} i.

Dissolve the morphine in the solution of cocaine, and proceed as above.

To be used by introducing a small piece of the cotton into the cavity of the tooth. It can also be used for earache by moistening a suitable piece, with a few drops of water, lauda-

num, or alcohol, and carefully placing it in the ear-passageway.

BORATED COCAINE COTTON.

(For burns and scalds.)

Cocaine solution, 2 per cent., \mathfrak{z} i;
Boracic acid, gr. xxx;
Glycerin, \mathfrak{z} i;
Carbolic acid, gr. xx;
Absorbent cotton, \mathfrak{z} i.

Dissolve the boracic acid in the glycerin and cocaine solution, add the carbolic acid, and proceed as in making plain cocaine cotton.

Very useful in the treatment of burned and scalded surfaces, and also in troublesome chafing, where pain and persistent inflammation are attendants.

This list is capable of very large extension. Only this short suggestion is needed to enable the pharmacist to carry his experiments to the limit of wish or convenience.

TREATMENT OF HÆMATOMA OF THE EAR.

DR. A. LEBRUN, in a clinical lecture published in the new Brussels journal, *La Clinique*, says that after having tried various plans for the treatment of hæmatomas of the ear, including free opening as well as Follin's method of making a number of punctures, and having found them all very unsatisfactory, he has latterly injected iodoformed ether with complete success. For this two needles are inserted into the tumor at opposite points; through the larger one, No. 3 of Dieulafoy's aspirator, the contents are drawn off, the puncture being closed by means of iodoformed collodion. Then through the remaining needle, which is that of an ordinary hypodermic syringe, from 15 to 60 minims of a solution of iodoform in ether, of a strength varying from two to ten per cent., is introduced into the cavity of the tumor. This injection causes some pain, which, however, soon passes off. No dressing is required, and a complete cure results. In one case M. Lebrun twice injected a saturated solution of iodoform in ether without evacuating the contents of the tumor. This occasioned severe and prolonged pain, an eschar of the size of a half-franc piece formed, and although this healed, the process required more than three weeks. The comparatively unsatisfactory result in this case is considered by M. Lebrun to have been due to the escape of a large part of the first injection, and to overdistention of the tumor.—*Lancet*, February 19, 1887.

NOTES ON PYRETHRIN.

The root of the *Anacyclus pyrethrum*, or pellitory of Spain, has long been used in medicine for its well-known properties as a sialagogue and local irritant. Its fusiform root, that breaks with a resinous fracture, with its radiated structure and black spots, cannot easily be mistaken.

In earlier times it was officinal in the majority of the pharmacopœias of Europe, in which it formed an active ingredient in numerous stimulating powders, tinctures, and gargles.

According to Mr. C. J. S. THOMPSON (*The Pharmaceutical Journal and Transactions*, January 15, 1887) the root owes its irritating properties to its active principle pyrethrin, or pyrethric acid, a very acrid resinous substance, which resides mostly in the cortical portion. A good sample of pellitory will yield about five per cent. of pyrethrin. On analysis the root is found to contain, besides pyrethrin, an acrid resin, volatile oil, yellow coloring-matter, tannin, gum, and inulin. Pyrethrin is a soft, dark brown resinous substance, having an unpleasant odor, and extremely hot and pungent to the taste. A very minute quantity placed on the tongue causes a strong burning sensation, which shortly increases, and remains for a considerable time, inducing a copious flow of saliva. A strong solution painted on the skin causes a sharp prickling sensation, and reddens the part where it has been applied. If the part is kept covered, a blister will be produced. Pyrethrin may be obtained by evaporating a washed ethereal extract, or the following more satisfactory method may be employed: Reduce the root to a coarse powder, and exhaust it by means of percolation with alcohol. Acidulate the percolated powder with acetic acid, and boil with more alcohol, and filter; mix the liquids and evaporate.

It is soluble in ether and alcohol, and readily soluble in oils or acetic acid. Pyrethrin is composed of an acrid, brown resinous substance, which is soluble in alcohol, but insoluble in water and strong alkaline solutions; and a dark yellow oil, which is soluble in alkaline solutions. This oil is not nearly so acrid as the brown resinous matter, and it is probable that what burning taste it possesses is due to a small quantity of the resin being mixed with it.

DIFFERENT METHODS OF TREATING CERVICAL CATARRH.

DR. L'VOFF, of K^{azan}, has reported in the *Meditinskoe Obozrenie* (*Lancet*, January 22,

1887) a number of observations made on the comparative value of different methods of treating catarrh of the cervix uteri. The total number of cases was eighty-two. Of these, thirty-six were treated by mechanical scraping of the mucous membrane, eighteen by means of powerful caustic applications, and twenty-eight with weak caustics. The method of applying the weak caustics was, after washing out the vagina with warm water or a solution of boracic acid, to swab the cervical canal with tincture of iodine or with a ten per cent. solution of chromic acid. This was done once a week, plugs soaked in glycerin of tannin being also used every other day. The strong caustic application consisted of a bougie made of sulphate of zinc and alum fused together. This was allowed to remain in the canal till it had all dissolved, which took place usually in one or two hours. Afterwards the mucous membrane presented a white appearance, due to the eschar. This fell off in five or six days, during which time warm vaginal douches were administered, and plugs of glycerin and iodoform inserted every alternate day. In the cases treated by scarification an iodoform and glycerin plug was left in for twenty-four hours, and the patient was then sent home. The results of these different methods of treatment were that the mild caustics ultimately effected a cure, but required at least two months to do so; while the severer methods—that is to say, the fused zinc and alum and the scarification—produced a permanent cure in about a fortnight. The author adds that no unpleasant symptoms were caused by either the caustics or the scarification in any of the eighty-two cases.

THE ADMINISTRATION OF PHOSPHORUS IN RICKETS.

The administration of phosphorus and of phosphates in rickets has been recommended, on the ground that in the diseased bones the earthy phosphates are greatly deficient, and that, introduced into the system, these substances will supply the deficiency. Phosphorus, as is well known from the researches of Wegner, when given to growing animals, renders the developing cancellous tissue of the bones denser than natural, more like the compact tissue; even in adult animals a similar change takes place. These results are independent, as Wegner showed, of the presence of excess of phosphates, for they occur when phosphates are absent from the food. Although, there-

fore, the reason for the administration of phosphorus in rickets is well grounded, medical men hold very different opinions as to its utility in that disease. Some have given it with cod-liver oil; as in Kassowitz's phosphorized cod-liver oil, which contains 0.01 per cent. of phosphorus. The objection to this mode of administration is not only that the phosphorus tends to deposit on standing, and thus a variable and even dangerous dose may be given, but it is impossible to say how much benefit (if any) that ensues is due to the oil, and how much to the phosphorus. A better mode of administration has been devised by Hasterlik. Phosphorus (0.01 per cent.) is dissolved in bisulphide of carbon (0.25 per cent.), and one hundred parts of water added; 1 teaspoonful is given twice daily, constituting a dose of 0.0001 gramme in the day. The bisulphide of carbon not only acts as a solvent for the phosphorus, but has, according to Dujardin-Beaumetz, a beneficial effect in intestinal catarrh, and might thus be of service in the early stages of rickets. How far this preparation is beneficial in the disease has not yet been sufficiently ascertained.—*The British Medical Journal*, February 19, 1887.

Reviews.

HOUSE PLANTS AS SANITARY AGENTS; OR, THE RELATION OF GROWING VEGETATION TO HEALTH AND DISEASE. COMPRISING ALSO A CONSIDERATION OF THE SUBJECT OF PRACTICAL FLORICULTURE AND OF THE SANITARY INFLUENCE OF FORESTS AND PLANTATIONS. By J. M. Anders, M.D., Ph.D., etc. Philadelphia: J. B. Lippincott Company, 1887.

Those who are already interested in plant-growing will find every page of this work full of interest to them, entirely apart from the question of the soundness of the author's views in relation to the remedial value of growing plants. So thoroughly has he studied the subject, so completely is he absorbed in it, and so practically, that there is scarcely a suggestion of value in regard to house-gardening that he has not given, and the unscientific florist will find his own field of view vastly widened, and to his great advantage, by the wider view of the author, who brings to the work a skill and science already cultivated in a far more trying field.

The question of the value of plants in general upon the surrounding atmosphere may be regarded as pretty well settled, and we must all admit that by them the balance of

nature and the integrity of the air is preserved, but we cannot forget that certain plants are notably injurious to the human race, and a still larger number under suspicion, and that still more, as yet unsuspected, may yet turn out to be hurtful in ways at present unknown. Then there is the question of the diseases of plants, house-plants being peculiarly liable to disease. That a very innocent disease of a plant may be a cause of a very serious disease in another plant is also known. Then there is the question of the sanitary condition of plant earth, the questionable soil in which they are potted, the more questionable but indispensable fertilizers, and the still more questionable fermentation and unseen growth in the damp and often sour soil. All these things and more are worthy of consideration before we rush wildly to the florist's rather than to the neighboring pharmacy when sickness breaks out in our families. Were the rosy view of the author to be applied, we should soon be prescribing carnation pinks and rhododendrons as freely as we now do pills, and the florist on the corner would grow in wisdom and pecuniary stature, while the patient apothecary would dwindle; polypharmacy would have its analogue in the polyflorist, who would order his flowers by the bouquet, and the worse the case the more the floral variety. The whole scheme of course needs practical development, but there is no doubt that the developer would appear, if he has not already. And where, then, would homœopathy be, and its sugar and its dilutions? The floral physician called to an urgent case, say of pulmonary hemorrhage, writes hastily and illegibly for ten monkey-flowers and a magnolia, with six lively pine-trees. The servant hastens to the florist, the florist's boy hastens back with a push-cart, and in a trice the plants are deposited by the bedside of the sufferer. She smiles feebly. The potent influence of properly-selected plant-life, assisted by the active remedial power of scientifically-applied plant perfume, does its work. She is saved! No nauseous doses, but "nature's own remedy," as the specific advertisements put it. How simple and touching, then, the position of the floral physician while the grateful family surround him and present him with the magnolia!

The florists will have qualified assistants, too, for mistakes may happen, and cast temporary discredit on the new system. The physician may order roses; the florist's ignorant clerk may send the tuberose; the patient

may die. All these things will, however, regulate themselves. The very thought of it all as a possibility seems to lift us above the sordid world of drugs, and though the vision may never be realized, we catch a glimpse of an elysium of practice, where the emancipated practitioner flits like a butterfly from flower to flower, and lives in a perpetual atmosphere of plant-moisture, perfume, and ozone. Ozone, ozone, how many theories have flourished in thy name!

The author of "House Plants" has carefully investigated the lives of florists. He finds that the greenhouse is a true sanitarium, and almost proves that the most deeply-seated tendency to phthisis may be eradicated, or held at bay, by leading a "florist's life;" but he also has discovered, or we have, from his account of his researches, that when once the business has been undertaken, it must be carried on to the end. There must be, literally, no looking back after putting one's hand to the plough or trowel, for to abandon the business is to invite death. Even to break a leg, and be kept out of the greenhouse for a few weeks, has been fatal. When such accidents occur, the sufferer, so far as we can see, must be treated in the greenhouse, surrounded by his favorite plants, boneset being probably the most beneficial.

The subject of house plants as sanitary agents involves indirectly the question of the relative value of dry and moist heat. The author argues in favor of a moist heat, which he would vary in its moisture to suit cases of different kinds; but so long as our winter catarrhs are contracted by the rough changes of temperature and by checked perspiration, so long will the transition from a greenhouse atmosphere to our out-door cold be injurious, and more liable to produce disease of the air-passages than a transition from the average dry air of our houses as ordinarily heated. Furnaces have much to answer for, but need not burn the air they furnish us, and need not disseminate the cellar air if properly fitted with cold-air flues. The air of a house should be still far from saturation, and be capable of rapidly drying perspiration from the surface of the body,—so dry that our clothing will be non-conducting, its interspaces being filled with dry air.

These few points of dissent, however, do not materially detract from the high estimate we have formed of Dr. Anders's work. The field is worth working, and so far we know no book on the subject of equal value. The author's style, too, is simple, forcible, and

possesses the homely charm which always accompanies the writing of a true enthusiast, and we recommend all to read it, feeling sure that few will put it down without a positive increase of knowledge in certain lines likely to prove serviceable in their every-day work.

E. W. W.

SPINAL IRRITATION (POSTERIOR SPINAL ANÆMIA).

By Wm. A. Hammond, M.D., etc.

Detroit, Mich.: Geo. S. Davis, 1886.

This is another number of the "Physician's Leisure Library." In it the author gives a careful history of the disease, with its literature. The opening sentence we quote: "Under the designation of 'spinal irritation' I described over twenty years ago an affection to which Americans, and especially American women, are liable to a greater extent than the people of any other country in the world." The eminent author, it will be observed, only described it "under the designation of spinal irritation." He did not invent the term, which he states "appears to have been first used by Dr. C. Brown, of Glasgow." The author's claim rests rather upon his theory of the cause of the affection being a posterior spinal anæmia, concerning which he says that it is better, when knowledge fails, to have some theory than none. His theory he supports by considerable argument, and in his subsequent pages gives us quite complete and graphic studies of the condition, its causes and treatment.

The treatment resolves itself primarily into blisters, which are most successful, and for rapid effect the actual cautery. Internally, he gives strychnine and phosphorus, coca, and general tonics. He considers it a manageable condition, susceptible of improvement generally, of cure often. The treatise is quite complete and useful, but contains nothing especially new at the present day.

E. W. W.

HANDBOOK OF PRACTICAL MEDICINE. By Dr. Hermann Eichhorst, Professor of Special Pathology and Therapeutics, and Director of the Univ. Med. Clinic in Zurich. One hundred and six wood engravings. Vol. II.

New York: Wm. Wood & Co., 1886.

The second volume of this work sustains fully the valuable characteristics which distinguish the first,—clearness, condensation, thoroughness, mark its pages. The condensation, complete absence of redundant words and sentences, complete absence of any style but the direct didactic, is remarkable, and the

time and patience of the reader are much economized. This volume, like its predecessor, starts upon a much higher plane of true scientific medicine than the average manual, or even complete monograph. Taking as an illustration of this the analysis of Part II., on "Diseases of the Œsophagus," we have a careful description, etiology, anatomical changes, symptoms, diagnosis, prognosis, and treatment of stenosis, dilatation, catarrhal and phlegmonous inflammation, corrosive inflammation, round ulcer, cancer, hemorrhages, perforation, spontaneous rupture, softening, spine paralysis, and spasm of the Œsophagus.

The present volume contains also chapters on "Diseases of the Stomach, Intestine, Liver, Pancreas, and Peritoneum." The section on "Diseases of the Urinary and Sexual Apparatus" commences with a very valuable chapter on "Symptomatically Important Changes in the Urine." This is well illustrated, and fully describes the most recent tests as applied to the urine for the detection of albumen and other abnormal constituents. In this chapter, perhaps more than elsewhere, the condensation of the subject-matter is rather a hindrance than a help.

The author, among his general divisions of true albuminuria, makes one between permanent and transitory. The various relations of serum albumen, serumglobulin (paraglobulin), peptone, propeptone are discussed. The best test for serum albumen known, the author says, is the heat and nitric acid test. The ordinary test is described, and also Heller's test, and the acetic acid and heat test. Regarding picric acid, we quote the author's exact words: "If urine which contains albumen is filtered, and an excess of concentrated picric acid is added, a flocculent precipitate will be produced, or, if the amount of albumen is very small, a simple cloudiness." The author does not believe with Cooke and Watkins that picric acid will produce a precipitate in non-albuminous urine which contains quinine or potassium salts. He says, "Peptones can also be recognized with the aid of picric acid. They are also precipitated by the acid; but, unlike albumen, are redissolved by boiling or on the addition of nitric acid." The metaphosphoric acid test will also detect peptones in the same way. All these tests, the author says, "will not distinguish serum albumen from paraglobulin." The latter is detected by saturating the specimen with magnesium sulphate, when the resulting precipitate is paraglobulin. After filtering this out,

the serum albumen is tested in the ordinary way. Propeptone: the urine is clear on boiling, cloudy when cold, if acetic acid or nitric be added, and clear again when warmed.

Chyluria is divided into tropical and non-tropical. In the former only has the filaria been discovered; in the latter "nothing is known concerning the genesis of the disease."

The author describes "Oxaluria" as a disease which exists in the minds of "English writers," and denies that there is such a "distinct disease of nutrition which leads to increased excretion of oxalic acid in the urine," and disposes of the matter by saying that it is observed after the ingestion of grape, spinach, celery, rhubarb, etc. The illustrations of "Diseases of Renal Parenchyma" are also full and excellent. Four illustrations exhibit the eye changes in renal diseases. The volume ends with a chapter on "Diseases of the Male Sexual Apparatus," and an appendix on "Diseases of the Supra-renal Capsule."

E. W. W.

A PRACTICAL GUIDE IN ANTISEPTIC MIDWIFERY IN HOSPITALS AND PRIVATE PRACTICE. By Henry T. Garrigues, A.M., M.D., etc.

Detroit, Mich.: Geo. S. Davis, 1886.

We have already had occasion to notice favorably several volumes of the "Physician's Leisure Library," among others the "Modern Treatment of Ear-Diseases," "The Use of Electricity in the Removal of Superfluous Hairs, etc.," and the two volumes entitled "New Medications." The great value of these publications, their handy and attractive form, excellent paper and type, and extremely reasonable price, twenty-five cents per volume, all commend them. They are new and original works of a high order, filling a place entirely apart from that occupied by other library and serial medical publications, and they deserve the widest recognition. The book of Dr. Garrigues on "Antiseptic Midwifery" is thorough and complete. And it probably often happens that the echo of what the great medical world is doing may be but faintly wafted to the rural practitioner, to his city brother immersed in the anxieties of general practice, and that, although the general facts are known to them, and perhaps the discussions of societies listened to and the published papers read, yet still they have but a faint and unreal idea of what perfect antiseptics is, in its recent adaptations. To such we especially recommend this work. It is a working manual. Any one possessed of average professional training can

easily and without expense practise it as well perhaps as the author. If any fail to realize its value, let them study Dr. Garrigues's book carefully, con his arguments, and read his results, and then calmly and dispassionately ask themselves whether it is not worth while to try it.

The argument that it is a good thing for hospitals but unnecessary for private practice is attacked by the author with great spirit and apparent success. He proves, or thinks he does, that under antiseptic lying-in is safer to-day in hospitals than it is in private practice without such precautions. He says, "Now the lying-in hospitals have become the safe places to be confined in." Of those who point to their thousands of deliveries without a case of puerperal fever he remarks, "Either their memory fails them, or they have a convenient definition of puerperal fever, in consequence of which puerperæ die of peritonitis, metritis, pneumonia, pleurisy, heart-disease, liver-complaint, kidney-trouble, meningitis, etc., but never of septicæmia." There is much force in the author's comment that if notes were kept of every case the mortality would somehow not be far from one in a hundred, and he thinks that the personal interests of the practitioner should be sufficient alone to force him to adopt the method of which he writes.

The expense and trouble of antiseptic when enforced among the poor in private practice are, the author thinks, very little. Ignorance rather than poverty is the opponent. The expense reduced to its lowest figure is carefully calculated, and amounts to one dollar and forty-four cents per patient, and this he considers is amply repaid in the diminution of necessary visits, the absence of protracted illness, and intercurrent complications.

But many who will decline to take what they consider useless trouble, if employed as a routine practice, would willingly avail themselves of the strictest antiseptic in special cases when confronted with the ominous symptoms of septic infection. The practitioner who has employed it daily will be familiar with its routine; but, if an inexperienced, some such book as this will be invaluable to him, for the author possesses the happy, if rare, faculty of clearly describing all his procedures in the simplest and plainest language. The description of the minute treatment of a patient, showing diphtheritic wounds of the vagina after delivery, will give the readers a good idea of the author's power in this line. In short, while we are unwilling to enter on

the question of the absolute necessity of so much care in all cases, none can doubt its value in special ones, and for this reason, if no other, we commend the book to all readers.

E. W. W.

THE PHYSIOLOGICAL, PATHOLOGICAL, AND THERAPEUTICAL EFFECTS OF COMPRESSED AIR. By Andrew H. Smith, M.D., etc.

Detroit, Mich.: Geo. S. Davis, 1886.

This volume of the "Physician's Leisure Library" contains a careful study of the effects of compressed air, as witnessed by the author while physician in attendance on the men working in the caisson employed in building the Brooklyn Bridge. As a practical study it is of great value, and may be said to afford the basis from which to estimate the value of the employment of compressed air therapeutically in the pneumatic cabinet and in other ways. The caisson was not devised as a therapeutic agent, and therefore is not liable to be under- or over-estimated. Dr. Smith has performed his part of observer and experimenter with great care and judgment, and his book deserves to be a standard authority on the subject. It is from such cases as he narrates, carefully studied as he has studied them, that great discoveries arise, and a leisure hour will be well spent in reading his carefully-written account.

A REFERENCE HANDBOOK OF THE MEDICAL SCIENCES. Edited by Albert H. Buck, M.D. Volume IV.

New York: William Wood & Co., 56 and 58 Lafayette Place, 1887.

We have already noticed in detail, as they have appeared, the previous volumes of this great and most useful publication. The present volume commences with the subject of "Ichthyol," and closes with a discussion of "Milford Springs." It appears to us to be in all respects equal to its predecessors, and confirms us in the opinion that, when completed, the "Reference Handbook" will furnish a most valuable book of reference to the general practitioner of medicine, giving him full and reliable information upon almost all conceivable subjects connected with the profession, and especially valuable for its full accounts of the various springs and health resorts of America. The illustrations are on a par with those of the other volumes. The lithographs comprise one representing test-tubes containing various growing bacilli, and showing quite well the peculiar characteristic forms of the colonies. This plate differs from most of its predecessors in having some prac-

tical value. On the score of æsthetic beauty we can commend Plate 17, which consists of various representations of carcinoma and sarcoma of the larynx. No amount of red and yellow ink has been spared in adorning this sheet of paper. If irregularity of outline, abundance of paint, and general hideousness of appearance can warm the hearts of subscribers, Plate 17 should be a success. Possibly it may be useful to some one, but such individual must be an extraordinary medical production.

HOT-WATER AND BEEF PLANS IN CHRONIC DISEASES.

This little book is an exposition of the peculiar method of treatment of chronic diseases devised by Dr. James H. Salisbury, now of New York City, who during the war of the Rebellion obtained notoriety by his alleged discoveries of the causes of measles, malaria, etc., discoveries which were founded on ignorance, but which for a few months obtained some acceptance through the credulity of the profession.

The present work indicates that the exponent of the Salisburian plan is no more learned than is its author. When we read that hot water washes down the "slimy yeast" of the alimentary canal, and that diseases of fatty degeneration and paralysis are due to the absorption of carbonic gas, we are enabled to diagnosticate the mental condition of the writer. Nevertheless usefulness attaches to the book, as revealing fully a method of treatment which was for a time "a rage" among certain people, and which in some cases really may be useful. Some physician whose statements are worthy of credence ought to go over the subject. We would very much like to know whether it is true, as is asserted in this book, that the sipping of half a pint of hot water of 110° to 150° Fahrenheit before each meal will cause the feces to become black, and alter markedly the constitution of the urine. By the way, it seems to us that it must be a well-trained throat which can drink water of 150°, the high limit of the Salisburian plan.

We can testify from our own experience that in cases of feeble digestion the meat-ball, made by scraping the pulp out of a beefsteak, and forming a mass like a sausage-cake, and then broiling, affords a most excellent article of diet. The American meat-chopper, manufactured at Athol, Mass., makes a very excellent substitute for the case-knife and the hand, and makes it possible to prepare these meat-balls without much labor.

The directions for the use of these choppers and for the methods of cooking in the little book are good, but are unnecessary. The choppers themselves contain all the necessary printed directions, and any good cook ought to know how to broil a meat-ball after one or two trials.

A TEXT-BOOK ON SURGERY, GENERAL, OPERATIVE, AND MECHANICAL. By John A. Wyeth, M.D.
D. Appleton & Co., New York, 1887.

The above work we have read, and will judge it from its title, viz., "A Text-Book on Surgery," or, in other words, a book to teach from; but may we not also look at it from the opposite side, and consider it a book to learn from? In answer to the first of these definitions, we do not hesitate to say that Prof. Wyeth has given us a most excellent book, one in which will be found all the advances of modern surgery and all that is good of older surgery. If at times the text is found too brief,—and from the scope of the work this must occasionally occur,—we have at least a suggestion, which may be further elaborated by referring to the more exhaustive encyclopædias or systems of surgery. The more important question to answer is in regard to the value of the book as a means of obtaining surgical knowledge, and, indeed, it is in this sense that the title of the work must be mainly considered. Again do we answer in the affirmative, and believe of the many text-books which are in use by the medical colleges, none are better, few are equal, and many are inferior; therefore we hope to see this work of Prof. Wyeth's recommended to those beginning the study of surgery, since we think a good foundation to build up a knowledge of the science and art of surgery may be found in it.

The question of surgical dressings is decided by Prof. Wyeth without any discussion, and we are also of the opinion that the time has now arrived when such discussions are unnecessary, believing, as we do, the final decision has been determined, and those surgeons who still obstinately, in the face of every-day facts, refuse to adopt antiseptic methods of treating wounds, are not practising surgery as a progressive science, and are not doing the best for the unfortunate patients who may place themselves under their care. The subject is, very properly by Prof. Wyeth, settled in a single paragraph, as follows: "This practice (antiseptic), which embodies the great principles of *cleanliness* and *carefulness* in surgery, is now so well

established among the best surgeons in America and Europe that any argument in its favor, as compared with the methods of one or two decades ago, I consider to be wholly unnecessary." The directions and various substances employed in order to carry out the antiseptic practice are briefly but satisfactorily given.

Under hydrophobia the author mentions the recent investigations of Pasteur, and states that this scientist claims he has "cultivated the specific germs of this disease, and through inoculations with the cultures immunity from rabies may be secured." This, we believe, is an error. Pasteur, so far as we know, did claim to have isolated the specific germ of hydrophobia, but later he denies having succeeded. While believing the disease to depend upon a specific germ, he has as yet never been able to demonstrate it, although many investigations were made in order to determine this question. The inoculations made by Pasteur on man, to prevent the development of this disease, have all been done with the spinal cords taken from rabbits, the latter having been inoculated from an animal said to have the disease transmitted to it by inoculation originally from a rabid dog.

The chapter on amputations has impressed us very favorably, and, with the author, we believe this surgical operation is becoming less frequent than before the antiseptic methods were employed. He writes "that in the present rapid advance in the science of surgery, and the great perfection in its art, the time is not far removed when amputations for other cause than gangrene will be comparatively rare." This is saying much, but when we look back and see what has been done, we cannot but anticipate a realization of the author's view. The methods of operating are concisely given, and leave no room for comment. Preference is given to the *solid-flap* method, viz., a flap composed of all the soft tissues lifted from the periosteum. The reasons why this method is to be preferred are stated by Prof. Wyeth as follows: "That flap will unite most readily, and prove most satisfactory, in the formation of which the normal relation of the skin to the subcutaneous soft tissues is least disturbed. It is always preferable to divide the skin, muscles, vessels, and other soft tissues squarely across and not obliquely, as must of necessity be done in forming flaps by transfixion. This method is applicable to most amputations." The illustrations showing the transverse sections of the extremities at different locations,

which have been copied from Prof. Braune's work, add much to the value of this chapter.

The article on surgical diseases of the vascular system differs from the other portions of the work, in that we have in it not a text but a very exhaustive treatise upon the subject. This is explained by the fact that it was written for and appears in the "International Encyclopædia of Surgery," and it is a most able exposition of these lesions, but we think it would have been better if the author had made it conform to the other portions of his book, since it contains much that is not amiss in an encyclopædic article, in truth necessary for it, but could with advantage be omitted from his present work. The important operation of "ligation of arteries" has been presented in a most masterly manner, and we cannot speak too highly of this portion of the book; more especially are the illustrations, which are so necessary in order to intelligently and readily understand these operations, to be praised. They may be called beautiful; indeed, the only objection we can make is that the artist has given us a too charming picture. To see the vital regions of the neck exposed by a most minute dissection, and have the face presenting a smiling, happy expression, the eyes open and sparkling with pleasure, is very pretty, but, in truth, unnatural.

Fractures are presented to us with all the modern and best methods of treatment. The directions given to properly obtain a favorable result in these frequent lesions are such as we can fully concur with, making, however, an exception in that of fracture of the femur. The choice is given between extension and the plaster of Paris dressing, and preference given to the former. In our opinion there is no choice, believing, as we do, that there is but one method, viz., extension; and to sustain this we quote the late Prof. Hamilton, who wrote as follows: "The plaster of Paris is not a safe or judicious dressing for fractures of the thigh, either for fractures through the shaft or for fractures near the upper or lower extremities of the bone, for fractures in children or in adults, for compound or simple fractures." We notice that Prof. Wyeth strongly condemns the recently introduced method of treating fractures of the patella by opening the joint and wiring the fragments together. This procedure is also in our opinion a rash, dangerous, and uncalled-for method, and we believe with the author, who says, "A careful observance of the rule of practice just laid down will secure a liga-

mentous union, with a restoration of the function of the extremity, equally as good in many cases as that enjoyed before the injury, and in the vast majority of cases equal to all the ordinary requirements of the limb, and this is accomplished without the slightest risk to the patient's life. . . . On the other hand, although an osseous union may, in the majority of cases, be obtained, the restoration of function is not more complete, the confinement to bed is longer, and the danger to life and the integrity of the part sufficiently great to deter the surgeon from employing this method (wiring) of practice."

Prof. Wyeth is not yet willing to accept the views of most German and some French surgeons in regard to the etiology of non-traumatic osteitis. He admits that tuberculosis is frequently a cause of osteitis, but thinks the non-tubercular form to be more frequent. Our own experience and reading upon this subject would incline us to the tubercular side of the question; at least we believe many obscure cases are better explained by this view than by any other. The directions given for performing exsection of the knee-joint, especially the use of the author's drills, to transfix the bones, are to be recommended. The chapter on abdominal surgery is well abreast of the period, and advocates, or at least describes, the various operations which have within the past few years been proposed, some of these, in our opinion, being nothing more than ante-mortem dissections, and as such should find no place in surgery. The reasons in favor of operative interference in wounds of the abdomen, given by the author, are quite convincing, and only further confirm our own views in regard to this method of treatment. He says, "1. The enlargement of a wound sufficiently to demonstrate its opening (or not opening) into the cavity of the peritoneum is a simple procedure, practically without danger. 2. Abdominal section is not difficult, nor, when skilfully and properly performed, a dangerous operation. 3. A penetrating wound of the abdomen, left without surgical interference, is attended always with great danger. 4. If any vessels of size are divided, hemorrhage is an immediate danger, and peritonitis a serious and probably fatal complication. 5. If the alimentary canal is opened, death is almost inevitable. The few recorded cases of recovery form such an infinitesimal proportion of the whole, that they should carry no weight against interference."

The descriptions of the surgical lesions of

the genito-urinary organs and their treatment are somewhat brief, but all essential points are included in the context. Venereal diseases have received due attention, and a rational method of treatment is advised; syphilis being properly considered a curable affection, provided suitable medication and sufficient time are given to its treatment. In the treatment of stricture of the urethra, internal urethrotomy is advised, as being better adapted to most cases, in so far as the chances for a permanent recovery are reasonably good. This opinion we are in accord with, but our practice in the treatment of this lesion has been first to employ gradual dilatation, and if all symptoms disappear in a reasonable time, no more is done; that there will not be a return of the trouble we cannot foretell,—probably sooner or later there will; however, we think in some cases there has been no further difficulty. We have at least given an opportunity for mild means to overcome the disease. If not successful, we then resort to more severe measures, and perform internal urethrotomy, after the method given by the author, which is essentially that introduced by Otis. The concluding chapters, on deformities and tumors, are in keeping with the rest of the book, and ably represent the modern methods and views in regard to these lesions.

Prof. Wyeth is certainly to be congratulated for the manner in which his publishers have done their part. The illustrations, the paper, the typography, and in fact the entire work may be regarded as a beautiful specimen of the art of book-making. J. H. C. S.

Correspondence.

BERLIN.

(From our Special Correspondent.)

In accepting with pleasure the invitation of the THERAPEUTIC GAZETTE to furnish its readers, in a series of letters, a *résumé* of the scientific life and activities of the German capital, it is my purpose first to describe briefly the condition of medicine in Berlin.

The centre of scientific ambition in Berlin is the University, of whose four faculties the medical only is at present pre-eminent.

This faculty is, however, the most distinguished in Germany. We need only mention the names Virchow, DuBois-Reymond, Helmholtz, Leyden, Gerhardt, Von Bergmann, Waldeyer, Liebreich, Schroeder, Gusserow, Westphal, Robert Koch, to recognize those upon

whom depends the fame of this celebrated institution. The most important of the subdivisions of the medical department of the University are the Pathological Institute, the Department or Institute of Physics, the Physiological Institute, the two Clinics of Internal Medicine and the Clinics of Surgery, the Anatomical and Pharmacological Institutes, the two Obstetric Clinics, the Clinics for Psychiatry, the Hygienic Institute. From these have emanated the conclusions drawn from researches which have influenced the medical knowledge of the world. The principal instructors hold the positions of directors of the institutes and clinics; the latter, excepting some which occupy new buildings especially constructed for them, are held in the oldest hospital in Berlin,—the Charité.

There are in addition a large number of hospitals which afford material for study and publication. Among these are the two large city hospitals, the Friedrichshain and the Moabit. A second nucleus of medical life are the medical societies of Berlin, the chief of which is the Berlin Medical Society, with Rudolph Virchow at its head: it numbers over six hundred members. Next in importance is the Society for Internal Medicine, with Leyden and Gerhardt leading its clinics. The surgeons meet in a "full assembly," which meets monthly, generally at the clinic or hospital wherever there may be an interesting case for demonstration. In addition there are the Gynæcological and Obstetrical Societies, the Society for Hygiene, the Society for Psychiatry and Nervous Diseases, the Physiological Society, the Society for Dermatology, and the Society of the Physicians to the Charité. All meet weekly, fortnightly, or monthly, and number from fifty to three hundred members. In these meetings there are valuable scientific discussions, and I shall have frequent occasion to revert to them in future. The official accounts of these societies are published in the special *Archiv*, and the monthlies of the Berlin Medical Society, of the Society for Internal Medicine, in the *Berliner Klinische Wochenschrift*, and the *Deutsche Medicinische Wochenschrift*, two of the most important of German medical publications, and edited in Berlin. In addition to the four societies mentioned, there are in Germany a number of associations which include the societies of the empire. Aside from standing societies which do not come within the scope of these letters, as taking place in the first rank of these is the Society of German Naturalists and Physicians, which

meets yearly in different places of Germany, and whose discussions open a wide field. Next in importance are the Congress of Surgeons, which meets in Berlin yearly, and the Congress for Internal Medicine, whose place of meeting is Wiesbaden. Accounts of the proceedings of these three great societies will be included in my letters.

It will be of interest to know that Professor Ehrlich, assistant in the clinic of Professor Gerhardt, has recently treated a number of cases of typhoid fever which occurred in the clinic with thallin, with most beneficial results: the details have been given in the medical journals. Following the results obtained in the clinic of Professor Leyden, antifebrin has been used with good results in acute joint-rheumatism by Müller in Gerhardt's clinic. He gave 30 grains daily for several days, and observed in some cases the cyanosis which Cahn and Hepp have reported. A moderate degree of uræmia was observed in some cases, and spectroscopic examination of the blood showed a methæmoglobin line. On shaking the blood with air the line did not disappear, showing that a portion of the coloring-matter of the blood was unfit to be oxidized by respiration. The blood examined was light brown in color. After the withdrawal of the drug a trace of the substance remained for several days. Müller concluded that a portion of the antifebrin became anilin in the body, and as such was injurious.

At a meeting of the Society for Internal Medicine, January 10, Dr. Harrlich, assistant in Leyden's clinic, spoke of salol, as recommended by Nencki and Sahli. He had used the drug in twenty-three typical cases of acute joint-rheumatism, in some cases of chronic joint-rheumatism, in a number of cases of acute muscular rheumatism, and in the doses given by Sahli—3iiss to 3ii—he had observed favorable effects following its use, and he had been led to believe that the carbolic portion of the compound drug was of especial value, as the results indicated a greater potency than could be attributed to salicylic acid alone. The drug was well borne, without inconvenient after-effects. It was given in powder, in wafers or tablets, 30 grains at a dose. Salol did not prevent endocardial complications or relapses; it was especially useful where high temperature was present, as is true of all antipyretics in rheumatism.

In a meeting of the Berlin Medical Society of January 19 Dr. Bidder described his method of aborting furuncles, a subject not new in literature, but regarding which extensive ob-

servations have not developed a fixed plan of treatment. Bidder began his treatment in 1875 with one hundred cases, which gave favorable results. His plan consists in the injection with a hypodermic syringe of a two per cent. solution of carbolic acid obliquely into the furuncle at one side; a second injection is made upon an opposite side; both go to the centre of suppuration. A few drops are given each time. In addition a compress wet in carbolic solution is placed over the furuncle, and when this cannot be used mercurial plaster is substituted. A repetition of the injections is not generally needed, and is not thought desirable. Furuncles so treated do not generally open, but are dissipated. In small furuncles the injection of a few drops suffices; in the larger ones two injections of half the contents of a Pravaz's syringe were enough; in the largest, as large as half a human hand, four injections of half or the whole syringe were given. When a condition of furunculosis was present, as sometimes occurs in diabetes mellitus, constitutional treatment was imperative. In contrast with the foregoing, Dr. Bidder treats felons by incision.

Dr. Lassar stated another method of treating the same affection. Recognizing the fact that the skin over the centre of a furuncle is thin, and that through this skin access is obtained to the pus beneath, Lassar has used very small spoons, as large as a needle, which have enabled him carefully, and without giving pain, to remove the contained pus from the centre.

PARIS.

(From our Special Correspondent.)

Salicylated Aliments before the Academy of Medicine.—The fact that the French Academy of Medicine has condemned the use of salicylic acid as a preservative of aliments is probably now well known; but the reasons which led to the decision are scarcely less important than the decision itself. They were elicited during the debates preceding the vote on the committee's report, and deserve careful consideration.

Dr. Constantin Paul, when the report was read, first entered the lists by breaking a lance in favor of salicylic acid. Admitting the occasionally untoward effects of the acid and its compounds when administered in therapeutic doses, he denied their danger in small quantities. He quoted the experiment of Dr. Kolbe, the discoverer of the artificial

acid, who took for thirteen months 1 gramme ($15\frac{1}{2}$ grains) of salicylic acid every day without being inconvenienced, that of Dr. Lehman with $\frac{1}{2}$ gramme daily, and others related by Raynaud and Oulmont. Dr. Constantin Paul's conclusion was that salicylic acid is an excellent and harmless preservative of aliments; that if its use be forbidden the aliments now preserved by its help will reach the consumer in a spoiled condition, and that it is better for the public to partake of salicylate than of spoiled aliments. In consequence, he was in favor of strictly limiting the proportion of acid allowable. From the start Dr. Paul was evidently at a disadvantage, having to prove a negative proposition, namely, that salicylic acid is not dangerous.

Dr. Vallin replied that if few accidents due to salicylic acid have so far been observed, it is because physicians have not looked for them. When they have a dyspeptic patient, how often do they examine his aliments or his urine for salicylates? If there were distinct symptoms of intoxication, perhaps attention might be awakened. But we often see even such characteristic affections as chronic lead-poisoning mistaken for anæmia or cachexia, until some keener observer notices the blue line on the gums, showing the real cause of the trouble. The danger of salicylates is greater for valetudinarians than for persons enjoying robust health. If their use is tolerated at all, everything we eat and drink will contain some of the chemical, for it is a great deal cheaper to preserve a twenty-five-gallon cask of wine or beer with ten grammes of salicylic acid worth four cents than to employ sufficient care, cleanliness, and good materials in the manufacture. The same remark applies to other aliments.

Dr. Constantin Paul admitted that care, cleanliness, and good materials are preferable to salicylic acid, but maintained the innocuity of the acid, since there are no positive records to the contrary.

Dr. Brouardel now taking the floor, said he had made some personal experiments throwing light on the subject. Having alluded to the acknowledged danger of salicylic acid to aged persons, or those suffering from impairment of the renal or digestive functions, he related the following results arrived at in experiments made by Dr. Bouchut and repeated by himself: "When a small dose of salicylic acid, say 20 centigrammes (3 grains), is daily administered to a young man of 20, a man of 50, and an old man of 70, on testing the

urine the characteristic reaction of salicylic acid will not be detected in the first specimen because the acid is transformed in the economy as it is absorbed; the same thing will often occur with the second, but never with the third subject. The acid will be still present in the urine of the third—the old man—several days after the administration has ceased. Hence it follows that if the dose be kept up for some time, salicylic acid will accumulate in the economy, and, in case of renal lesions, serious accidents may result. It is difficult and often impossible to determine the cause of such accidents, because they resemble so much those due to cerebral or gastro-intestinal troubles, and I incline to think the evil is of more frequent occurrence than is generally believed. Within the past ten years my associates and myself have made more than three hundred post-mortems at the morgue in cases of sudden deaths. In more than one-half of them death had been caused by arterial sclerosis, and often the renal lesions due to this disease had occasioned the suddenness of the death by impeding the elimination of alcoholic beverages and even medicines administered. The symptoms observed during life, viz., coma, convulsions, cephalalgia, etc., had rendered the inquiry necessary. I do not mean to say that salicylic acid had killed these patients, yet I cannot believe that the chemical would have been free from danger to them, and I am so much the more of this opinion because the slightest excess for such subjects, a bottle of champagne, for instance, is sufficient to cause death. Still, I would not for this reason forbid the use of champagne."

Dr. C. Paul. "Such would be the logical conclusion."

Dr. Brouardel. "Not at all, because when you drink a bottle of champagne you know what you are doing, and when you swallow salicylic acid in your food you do not know it. The danger lies in the underhanded addition. If salicylating be allowed, there will be no limit to the dose absorbed in a day. All aliments, solid as well as liquid, being liable to have their little seasoning with salicylic acid, a man may very easily in this way take from one to two grammes in twenty-four hours. And those who are the most affected by the acid are the very ones whose kidneys cannot eliminate, and thereby will not show the presence of the dangerous chemical. It must not be forgotten that every year fifty tons of salicylic acid are sold and used for preserving alimentary substances. Here is a real danger against which the Academy should

protest by adopting the committee's conclusions."

The committee's report was, of course, concurred in by a large majority,—nearly a unanimous vote.

Dangers of Santonin.—Dr. Laure, at a recent meeting of the Lyons Medical Society, related an interesting case of santonin-poisoning. On December 25 last he was called to visit a child $3\frac{1}{2}$ years old. The parents attributed the evident intoxication to some black lead which the child had daubed over his lips. As black lead, notwithstanding its name, consists of nearly pure carbon and contains no lead, the case was somewhat obscure. The patient was lying on his back, in a state of deep prostration, now and then interrupted by sharp cries. The child then would bend up its knees, and place its hands on its abdomen, apparently the seat of the pain. This fit over, he would fall again into the former somnolence. The face was of a livid paleness, the pupils dilated, breathing frequent, the pulse rapid and irregular, while the rectal temperature remained below 37° C. (98.6° F.). The stomach would immediately reject anything ingested.

Matters passed by the patient after the administration of a purgative enema, advised by the family pharmacist, showed nothing abnormal, excepting the deepened coloration of the liquid portions, and this was at first attributed to the drugs themselves from which the enema was composed.

On the whole the symptoms were very perplexing, when the mother, on being interrogated again, remembered that *two days before* she had given the child a dose of 10 centigrammes ($1\frac{1}{2}$ grains) of santonin. She even had a second powder like it, but, fortunately, did not administer it. It appeared, also, that the day before calling in the physician the child had passed what the parents thought to be bloody urine. This color, Dr. Laure thinks, was simply due to santonin, as Wood states it to be the case finally.

Perhaps the worst symptom was the complete retention of urine, none having been passed within twenty-four hours. But once the case was clearly understood, the treatment was easy and the recovery rapid. A warm bath and a laxative enema restored the flow of urine, and a copious passage relieved the abdominal tympanitis. In a few days the patient was well again.

This custom of dosing children with santonin seems to be a common one with the

French working classes. As soon as the little ones have the slightest diarrhoea caused by teething, some parents conclude they have worms, and give them the medicine without any medical advice. Besides, they administer it simply powdered, without adjuvants or correctives.

As regards the dose of santonin, Dr. Laure thinks the rule laid down by Benzinger, viz., as many grains as the child has years, four days in succession, is one that should be regarded with suspicion. He prefers Wood's advice,—not to exceed one grain for a child less than two years.* Dr. Laure is also of opinion that it is very desirable to combine santonin with a purgative; calomel, for instance. As to the antidotes of santonin, ether, and especially chloral, have been recommended as the best by Becker and Binz. In a case when convulsions or nervous troubles occur, they would have been used willingly. But in the case just narrated it was thought more advisable to facilitate the elimination of the poison by the kidneys and bowels, and afterwards to administer tonics.

Sulphate of Zinc in Epsom Salt.—The appearance of magnesium sulphate resembles so much that of zinc sulphate that there is always some danger of the two salts becoming accidentally mixed together. A little sulphate of magnesium in a sulphate of zinc lotion would probably matter but little. In a dose of Epsom salt, on the other hand, 10 or 15 grains of white vitriol are exceedingly undesirable. A very simple test, recommended by M. Machelart, a pharmacist of Lille, will obviate all danger from this cause. It consists in the addition of ferricyanide of potassium to a solution of the suspected sulphate. Pure sulphate of magnesium is not affected by the test, while sulphate of zinc affords a dirty yellow precipitate that can be noticed even when only two per mille of the contamination is present. As red prussiate of potash is to be found in most pharmacies, it is easy to thus prevent the occurrence of accidents, or rather their recurrence, for it seems they have happened before.

Unexpected Death of Prof. Bécclard.—Dr. Jules Bécclard, a professor of physiology at the Paris Faculty of Medicine, and the dean,

or president, of the Faculty, died on February 9, after an illness of only eight days, at the age of but little over sixty-eight years. His father, who was a native of Paris, like the son, and a professor of anatomy at the Faculty of Medicine, died when Jules was but seven years old. The widow later on married Dr. Ferrus, also a professor, by whose advice young Bécclard applied himself to the study of mental diseases, and became an interne at the Charer-ton Hospital. But on obtaining his diploma he preferred physiology, anatomy, and laboratory investigations. Having become an *agrégé* (fellow of the Faculty) in 1844, he lectured on anatomy and physiology from 1845 to 1859, and afterwards devoted himself to original researches. He was elected a member of the Academy of Medicine in 1862, its perpetual secretary in 1873, and dean of the Faculty in 1882. Dr. Bécclard's writings are numerous and important. For years he was connected with the *Gazette Hebdomadaire*, *Archives de Médecine*, Dechambre's *Encyclopédie de Médecine*, etc. His treatise on "Human Physiology," published in 1855, is now a classical work in the hands of most students. Among his other publications the following may be quoted: "Système Cartilagineux" (1864); "Eléments d'Anatomie Générale," by his father, a new edition (1851); "Hygiène de la Première Enfance" (1852); a translation, with Dr. Sée, of Kolliker's "Treatise on Human Histology," from the German, etc.

PARIS, February 18, 1887.

CHEMICAL FEEDING.

(From an Occasional Correspondent.)

To the Editors of the THERAPEUTIC GAZETTE:

SIRS:—The spirit of self-sacrifice with which American physiological chemists, so called, are endeavoring to build up the failing digestion of the American people is one which needs no commentary or laudation on my part. Its fruits speak for themselves. Are not their praises, or, at least, their taste, in everybody's mouth? What with pepsin, pancreatin, extract of pancreas, papoid, beef extracts, peptonoids, peptogenic powders, condensed milks, juices and extracts of fresh flesh, health foods, gluten bread, and compounds, principles, extracts, and adornments too numerous to be mentioned, the suffering Americans are in a fair way to be sustained in their vital functions, and there is reason to hope that the time will come when, the gynæcologists having removed all the abdominal organs, the lightened body, artificially fed,

* It must be borne in mind that when modern French writers use the term "grain," which, fortunately, they seldom do, they mean five centigrammes, while the English grain is equal to about six and one-half centigrammes.

may go on its way rejoicing through years of usefulness.

Of all these remedies, I would like to call the attention of your readers especially to peptonoids, of which the most recent addition is lobster peptonoids.

"Lobster peptonoids" represents the very flower of chemical research. Beef, mutton, pork, and chicken peptonoids, Thanksgiving peptonoids of turkey, Western peptonoids of bear and buffalo meat, the Southern (colored) "possum peptonoids," but the invaluable lobster peptonoids languish for want of a suitable introduction. By a true flash of genius it is brought to our notice in a series of diet tables or leaflets, whereon are printed the regulation diet for the different diseases. The diet tables are originally, "as revised by leading physicians in Australia and New Guinea," quite free from suspicion, and represent the accumulated wisdom of the profession. All that the inventor of lobster peptonoids had to do, in order to render them worthless, was to print on each leaflet, in a prominent place on the list, "lobster peptonoids." We do not deny the value of these peptonoids, but it is hard to believe that they are so universally valuable in every disease. In some diseases, notably in cholera infantum and varicella, they have undoubtedly achieved great results, especially when associated with terrapin peptonoids. There is the direct argument of common sense for their use, since both lobster and terrapin are water-fowl, and cholera infantum is characterized by watery discharges, and varicella by a watery eruption. Even in gonorrhœa, which affects the water-passages, and in cystitis they might be tried with some hope, and in ascites, but we must protest when we find them recommended in such serious and prevalent diseases as scabies and parotitis.

When the products of real digestion are suspected, under slight deviation from the normal, of becoming deleterious, when a man may be actually poisoned by the products of his own digestive apparatus, it beseeches us to be cautious in employing these new peptonoids. Already pepsin, time-honored pepsin, is under "suspicion of blood-poisoning." It always had a guilty smell, like old anatomical specimens, and an ancient and corpse-like taste, but the world took it at our valuation, a sign of that childlike confidence that the world has always displayed towards us. But now men and manners are changing, and as men no longer take theology from the priest without gainsaying, soon they will hew out for themselves new systems of medicine and

pharmacy. Where, then, will the lobster peptonoids go but into the world's lumber-room, with celery and coca, cerebro-stimulators, liquid foods, "each teaspoonful representing a pound of steak, one chop, six eggs, and half a dozen raw oysters, with a loaf of stale bread," and the thousand and one *quasi* remedies which chemical and pharmaceutical ingenuity devise and force upon us daily and hourly, which cover our desks and tables, are thrust upon us by overzealous agents, and even steal insidiously upon us through the daily post. They fill and distract our waking and sleeping hours till they crowd out the ancient, established, and valuable remedies, tormented and perplexed by the cloud of phantasmal ones which encircles us. And not only us, but the general public, for their circulars flutter on the door-steps of private residences, and come by mail to citizens guiltless of medical knowledge, all extolling the marvellous effects of their elixirs, their nerve invigorators, their wonderful newly-discovered tonics. It will soon be a necessary rule never to employ a remedy so introduced, even though by so doing we shut the door on that most invaluable preparation, the "lobster peptonoids."

URTICARIA FROM INDIGESTION.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—Will you, or some of our scientific men, tell me why it is that indigestion, characterized by burning in the stomach, with sour or bitter eructations, after meals, will cause an intolerable itching, generally, of the whole cutaneous surface between the knee- and ankle-joints, but sometimes in spots, and nowhere else? I have been applied to occasionally, for the last eight years, by men of middle age, for treatment of this trouble. I had several cases before I suspected the cause, and was not thoroughly satisfied till, experimenting upon myself, I found that a cup of strong coffee three times a day, or a tablespoonful of distilled liquor for two days, would make my legs itch so that I could find no rest till I had thoroughly rubbed with table-salt, and then I sometimes use carbolated glycerin. The rubbing with the salt is a perfect luxury. As before said, it is confined to men of middle age; have never found a case of it in the opposite sex. Now, what I want to know is, why this disturbance of the stomach is telegraphed by the nervous system to this distant locality and nowhere

else? I ask for information, private, or, if you think best, through the columns of the GAZETTE.

Yours, etc.,
R. L. HINTON.

PRESCOTT, ARK.

[It is perfectly well known by every practitioner that gastric or gastro-intestinal irritation will produce urticaria and other dermal eruptions or irritations. There is, therefore, nothing novel in the experience of our correspondent. He is mistaken in supposing that the thing is confined to men, or is more frequent in men than in women, excepting in so far that men more frequently over-indulge themselves in the pleasure of eating and drinking than do women. The skin-trouble is undoubtedly produced in many of these cases through the intervention of the nervous system, the irritation of the gastric nerve being reflected to the distant surface of the body. In some cases, however, there is probably absorption of a poison produced in the fermenting mass in the stomach or intestines. In other instances the gastric irritation and the disorder of the skin are the results of a common cause. The symptoms detailed by our correspondent are especially apt to occur in gouty people, in whom a little excess at the table will provoke an outbreak of acid dyspepsia, which is largely the expression of a gouty condition in which the tension is habitually so great that a little more irritation provokes a gouty discharge. In the great majority of cases a pruritus is gouty, but when occurring in middle-aged women, it may be a climacteric phenomenon.—EDS. THER. GAZ.]

POTASSIUM BROMIDE IN SALIVATION.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN :—In a late issue of your valuable journal I read an article recording Dr. Schunn's experience in the use of potassium bromide in salivation. In an article of mine published in the *New Orleans Medical Journal*, I mention the use of this medicine in a case coming under treatment during the month of June, 1885, also stating that I had treated cases of like nature with it during several years.

I especially remember writing concerning a case of nursing sore mouth, complicated with excessive salivation, resisting treatment until I put her on this remedy, locally and internally. I was gratified in making a complete cure, and believe any case, neurotic or reflex,

will be benefited, and many cured, by its use. I have also found it as efficacious in relief of painful dentition as a certain much-vaunted French remedy, and much cheaper.

Yours truly,

A. PARKER CHAMPLIN.

BAY ST. LOUIS, MISS., February 24, 1887.

Notes and Queries.

INCOMPATIBLE PRESCRIPTIONS.

The following examples of untoward results following the combination of familiar prescriptions are given in the *Deutsch-Amerikanische Apotheker-Zeitung* for January 15, 1887, as original with Ch. T. P. Fennel in "The Principles of Pharmacy." While these incompatibilities may be well known, yet their repetition as a reminder will not be devoid of interest.

A common and dangerous action is that resulting from the mixture of alkaloids with alkalies or alkaline salts, of which the following is an example :

R Strichninae sulphat., gr. ss;
Elixir. brom. chloral., ℥viii. M.
Sig.—A teaspoonful morning and evening.

The result of this mixture is a colorless solution, from which is deposited in a few hours a crystalline precipitate, which is the greater portion of the strychnine ordered. Although the elixir is not officinal, it is frequently prescribed, and its potassium bromide will deposit the strychnine as an insoluble bromide. The last dose taken, unless great care to shake the mixture well was observed, would result disastrously.

The following prescription may also result badly :

R Morphin. sulphat., gr. ii;
Liq. ammon. acet., ℥ss;
Aqu. destillat.,
Syr. simpl., aa ℥ii. M.
Sig.—Teaspoonful doses as ordered.

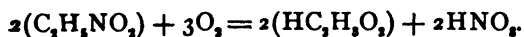
When the diluted acetic acid has been neutralized, and an excess, although not great, of ammonium carbonate is present, the precipitation of the alkaloid will result as in the first instance.

The following may also prove incompatible :

R Potass. iodid., ℥i;
Spts. æther. nitros.,
Aque, aa ℥i. M.

When the spiritus ætheris nitrosi is not

free from nitric and acetic acids (a result which is produced by the action of the air) iodine will be set free, and a colored solution take the place of a colorless one. The chemistry of the decomposition of the spiritus ætheris nitrosi is as follows :



A familiar example of decomposition occurring in the organism when chemical substances are given is found in the simultaneous use of calomel and potassium iodide, as follows :

R Hydrarg. chlor. mit., gr. iv;
Sacchar. lactis, gr. x. M.
F. pulv. No. 10.

Sig.—A powder three times daily.

Also

R Potass. iodid., ℥i;
Aqu. destillat., ℥iv. M.

Sig.—Teaspoonful every three hours.

A reaction between the calomel and potassium iodide occurs in the stomach, and bad results, through the irritating mercurial formed, may occur.

An explosion or unfortunate formation of gas may result from this prescription :

R Ammon. carbonat., ℥ii;
Syrup. scillæ, ℥i;
Syrup. senegæ, ℥i. M.

The acetic acid in the syrup of squill has been overlooked in this combination: its union with the ammonium salt would result unfortunately through the liberation of carbonic acid gas.

In those cases where ingredients are ordered which even in a measure tend to produce insoluble compounds, the ingredients should be diluted as much as possible, that the resulting coagulum or compound may be easily dissipated by shaking. This is illustrated by the prescription—

R Liq. ferri chlorid., ℥iss;
Muc. gum. arab., ℥i;
Aqu. destillat., ℥iv.

in which the iron and mucilage should both be diluted before mixing.

The same caution obtains when tannin or liquoritia is combined with metallic or alkaloidal salts.

R Extr. hyoscyami aq., ℥ss;
Tinct. valerian., ℥iii;
Spir. ætheris nitrosi, ℥vi. M.

In the above the extract is to be diluted before mixing with the spiritus ætheris nitrosi.

The prescription

R Tinct. iodin., ℥i;
Aqua, ℥i. M.

will result in the separation of free iodine; to prevent this potassium iodide should be added.

The prescription

R Potass. chlorat., ℥i;
Acid. hydrochlor., ℥ii;
Aq. destillat., ℥x. M.

results in different ways. If the potassium chlorate is immediately added to the acid, and then water mingled with the resulting fluid, chlorine gas is formed in solution. If the potassium chlorate is first dissolved in water, and then the acid is added, free chloric acid results.

A NEW "CURE FOR CANCER."

DR. VELLOSO lays claim to having cured several cases of epithelioma of the face and lips with the juice of alvelos, a plant which belongs to the family of Euphorbiaceæ. It acted as an irritant, and destroyed the diseased tissue, which was quickly replaced by healthy granulations. Of the three different kinds of alvelos (male, female, and wild), the second is considered the most efficacious. It is found at Pernambuco, and although the natives have employed the juice for some time, it has not come into extensive use on account of the severe pain which it causes. The best results were obtained with the juice in a concentrated solid form, and with the addition of vaseline or lanoline. This preparation should be applied with a brush to the affected part (previously washed with a solution of carbolic acid), which should then be left exposed to the air for at least an hour. It should afterwards be covered with lint. This treatment should, as a rule, be repeated every two or three days, and never more than once in twenty-four hours, as the pain of the application is severe. The treatment was more speedily successful when begun before ulceration had occurred.—*British Medical Journal*, January 1, 1887.

ADONIS VERNALIS IN HEART-DISEASE.

DR. J. G. HERRMANN, of St. Louis, writes us that he has recently had considerable experience with the use of adonis vernalis in cardiac affections. He believes that his experience, which has extended over ten months,

warrants his statement that, while free from the evil effects of digitalis, infusions of *adonis vernalis* are quite as efficacious as that drug. He prescribes it in the form of an infusion, of the strength of three drachms of the herb to six ounces; of this he gives a tablespoonful every two hours. He refers to several cases in which this drug proved successful even after digitalis had failed. One was a case in which the feet were highly œdematous, and there was general anasarca from heart-lesion. In two weeks of treatment with the infusion of *adonis vernalis* every two hours, in tablespoonful doses, almost perfect relief was secured. So also he states that he has caused great relief to a case of ascites, produced through heart-disease. He noticed that it increased the fulness of the pulse and strengthened the cardiac pulsation. In asthma also he has combined it with *quebracho* with very satisfactory results.

The following are some of the prescriptions which he has employed :

R Fl. ext. *adonis vernalis*.
Sig.—From 2 to 6 drops, as necessary.

R Fl. ext. *adon. vernal.*, ℥ss;
Syr. menth. pip., ℥vi.

Combined as desired sometimes with brom. sodium and tr. *opii camph.*

Sig.—℥i every two hours daily.

In asthma :

R Fl. ext. *adonis vernalis*, ℥ss;
Fl. ext. *quebracho*, ℥ii;
Tr. *opii camph.*, ℥ii;
Syr. menth. pip., ℥vi. M.
Sig.—℥i every two hours.

HYSTEROGENIC ZONES ON THE MUCOUS MEMBRANES OF HYSTERICAL SUBJECTS.

DR. L. LICHTWITZ, of Bordeaux, following up the researches of Gaube on hysterogenic zones on the external surface, and of Blau-Fontenille on lethargogenic and lethargoinhibitory zones in hysterical subjects, has shown that not only the external, but also the mucous, surfaces of the body present in certain hysterical subjects areas the touching of which induces attacks either of a convulsive or a hypnotic character. This may be important in case examination with the nasal speculum, the laryngoscope, or other instruments is required. In some cases it was found that even cocaine did not prevent an attack. Dr. Lichtwitz points out the importance of knowing the spots where inhibition

or arrest of convulsions can be produced, in case of the accidental induction of an attack. According to his observations, there is no accessible part of the mucous membrane which may not be the seat of "hysterogenic zones," the most usual place being the nares. In one of his cases, one side of the nostril evinced spasmogenic and the other lethargogenic properties.—*British Medical Journal*, February 12, 1887.

STOMACH DIGESTION.

Opportunities for studying gastric digestion through fistulous openings into the stomach are, thanks to modern surgery, more frequent than formerly. This is important, as the physiology of digestion, as understood at the present day, requires more than the classical instance of Alexis St. Martin to place it on a sound experimental basis. Such a case with experiments *ad hoc* is recorded in the *Revue Scientifique* by VON HERZEN, of Lausanne. The subject was a man, æt. 28, on whom gastrostomy had been performed for occlusion of the œsophagus. The observations made were as follows : Bile always appears in the stomach during digestion, but generally only in the later stages. The amount of HCl amounts to 1.8 to 1.9 grm. pro litre; it increases during digestion and reaches its maximum in the third hour. Sodium chloride appears rather to diminish the amount of acid. When the stomach was empty in the morning but little pepsin was found, and a large amount of propepsin; peptogen accelerated digestion. In the first hour, of a quantity of albumen introduced, two per cent. was digested without peptogen, twelve per cent. with it. In the second hour, twenty-three per cent. was digested without, forty-five per cent. with peptogen. In the third hour, fifty-one per cent. without, seventy-six per cent. with, peptogen. These results agree with those obtained by Schiff. Chloral, quinine sulphate, and above all potassic iodide, retard digestion. The author would forbid red wine in disturbances of digestion, but would recommend bouillon and dextrin; blood fibrin is also indicated in many cases.—*Medical Press*, January 12, 1887.

THE CURE OF HYDROCELE BY CORROSIVE SUBLIMATE.

MR. JAMES MILLER in a recent number of the *Lancet* recommends the following method in the treatment of hydrocele : The contents

of the sac are to be evacuated, and $\frac{1}{2}$ of a grain of corrosive sublimate dissolved in 15 minims of water (the solution therefore being one grain to the ounce) injected into the sac. This treatment Mr. Miller claims will cause no pain and no return of effusion. The author states that he has employed this method in four cases in which simple tapping had been previously several times followed by the return of the effusion, but that permanent cure resulted after the employment of corrosive sublimate injections.

TREATMENT OF CEREBRAL PNEUMONIA.

HUCHARD advises the following regimen in the case of a child 16 months old :

1. Emetics.
2. Counter-irritants used for three hours at a time.
3. Brandy, in doses of $2\frac{1}{2}$ drachms.
4. Per rectum,

Aquæ, ℥iiss;
Quininæ bisulphat., gr. iiss.

And later in the disease the following :

Aquæ destill., ℥x;
Valerian. pulv.,
Sodii bromid., aa gr. v;
Camphor,
Muscæ, aa gr. iii;
Mucilag. acaciæ, q.s.

THE DIGESTION OF MILK.

M. REICHMANN, of Warsaw, has recently made several experiments on the digestion of milk in the human stomach. The subject was a young man, aged 22, in robust health. The experiments were made by means of the stomach-pump, with unboiled, as well as alkaline and boiled milk. The results were as follows: Three hundred cubic centimetres of unboiled milk are evacuated by a healthy stomach four hours from the time it has been taken, although the regular digestion is completed three hours afterwards. Coagulation of the milk takes place about five minutes after ingestion, and does not depend on increase in the quantity of acid, but on another agency, possibly the fermentation of rennet. During the digestion of three hundred cubic centimetres of milk, the contents of the stomach show the greatest average degree of acidity (thirty-two centimetres per cent.) at the end of an hour and a half. This acidity is owing, when digestion begins, to the presence

of lactic and hydrochloric acid; the latter only appears three-quarters of an hour after the ingestion of milk. Half an hour after taking the milk, the quantity of peptones is increased, and remains so for an hour and a half, after which time it becomes perceptibly less. Boiled milk (heated at from 16° to 26° C.) was taken into the stomach; three hundred cubic centimetres were digested in two hours and a half; the acid contents of the stomach disappeared in three hours. After the ingestion of boiled milk, peptonization, which in that case is more energetic, begins sooner, and the clots and caseine are not so thick as when unboiled milk is given. Experiments with alkalized milk have shown that alkalization of milk prevents the peptonizing action of gastric juice. One hundred cubic centimetres of milk, alkalized by means of bicarbonate of sodium, leave the stomach entirely at the end of two hours. Alkalization does not prevent milk in the stomach from coagulating under the influence of rennet. In conclusion, M. Reichmann says that the result of all his experiments on one person entirely coincided with nine previous experiments he had made.—*The British Medical Journal*, February 12, 1887.

TO STOP TOOTHACHE.

GESELL-FELS makes the following mixture, which is an oily liquid, and introduced in the tooth cavity has proved very effective :

Camphor, gr. lxxv;
Chloral hydrati, gr. lxxv;
Cocaini muriat., gr. xv.

PRESCRIPTION FOR HEADACHE.

The following is from DUJARDIN-BEAUMETZ :

Ethoxycaine, gr. xii;
Sodii salicylat., gr. xv;
Aquæ destill., ad ℥i.

Dose.—Teaspoonful or table-spoonful.

GUIBAUT recommends the following in psoriasis :

Sodii arsen., gr. $\frac{1}{4}$;
Ext. gentian., gr. iss.

In pill form.—Two or three pills after each meal.

Also frictions twice daily with

Adipis, ℥iii;

Acid. pyrogall., ℥iiss to ℥iv.

Also a thorough cleansing with soap every two days.

—*Les Nouveaux Remèdes*, No. 23.

— THE — Therapeutic Gazette.

Whole Series,
Vol. XI.

Detroit, April 15, 1887.

Third Series,
Vol. III. No. 4.

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Original Communications.

THE TREATMENT OF PHTHISIS BY SULPHURETTED HYDROGEN.*

By H. C. Wood, M.D.

IT has not been many years since the faces of patients in a consumptive hospital were merged into a uniform ugliness, each in fact being cased in a mask of greater or less proportion, with various machinery in its centre, which was dignified by the name of a respir-

ator. It is noteworthy that the respirator was armed with germicides or antiseptics, and was to cure consumption antiseptically. Now the destroyer of phthisis germs and the characteristic phenomenon of the pulmonary hospital bids fair to be a caoutchouc bag, a bottle of bad-smelling solution, and a rectal tube and nozzle. Whether this last claimant for therapeutic favor shall, as is not improbable, finally follow the respirator into oblivion or not, is at present uncertain. But the matter certainly is of sufficient importance to require careful treatment at the hands of the THERAPEUTIC GAZETTE.

In 1883, M. Debove, professor at the *Hôpital de la Pitié*, declared in one of his clinical lectures that consumption being due to

* Dr. V. Morel, "Nouveau Traitement des Affections des Voies Respiratoires." Paris, 1886. *Gazette Hebdomadaire*, December 17, 1886. *La Semaine Médicale*, July 14, 1886; October, 1886.

the presence of a parasite, the proper treatment of it was the use of a parasiticide. It was left, however, for M. Bergeon (of L'Ecole de Médecine of Lyons) to put into actual practice this suggestion, and on the 12th of July, 1886, he gave his results to the French Academy of Science. He rejected the lungs themselves as the channel through which the parasiticide should find entrance into the system on account of the rapidity of absorption from them, and of the fact that medicines taken up by them are carried immediately in a concentrated form to the right side of the heart, and, moreover, exert in the lung itself a too great local irritant influence. The disagreeable tastes of most of the antiseptics render their administration through the mouth and stomach difficult, whilst the work of Claude Bernard has shown that gaseous substances taken into the large intestine are absorbed with great rapidity and go into the general system. M. Bergeon, led by this train of thought, used various substances, such as chlorine, turpentine, ether, ammonia, and bromine injected into the rectum, but found them all so violently irritating that they had to be abandoned, but at last he discovered that a mixture of carbonic acid and sulphuretted hydrogen was perfectly tolerated by the intestines, if the gases be pure and be unmixed with atmospheric air. Under these circumstances the rôle of the carbonic acid was to act as a diluent to the sulphuretted hydrogen.

The apparatus of M. Bergeon consisted of a caoutchouc bag having a capacity of four or five litres, which was filled with pure carbonic acid and connected with a Wolffe's bottle, which was in turn connected with the tube inserted into the rectum of the patient, so that by compressing the bag the carbonic acid could be forced to bubble through the solution of sulphuretted hydrogen, natural or artificial, in the Wolffe's bottle, and pass into the intestines. The common sulphurous waters, especially Eau de Bonnes or Eau de Challes, were thought by Bergeon to be superior to any artificial waters, but this is probably a mistake.

In the Hôpital Cochin, where the method has been much practised, the following two solutions have been employed :

SOLUTION NO. 1.

R Sulphide of sodium, pure, 10 grammes, or 10 parts by weight;
Distilled water, enough to make 100 cubic centimetres, or 100 parts by weight.

One cubic centimetre of this liquid engages exactly ten cubic centimetres of sulphuretted

hydrogen when there is added to it one cubic centimetre of the following solution (No. 2) :

SOLUTION NO. 2.

R Acid, tartaric, 25 grammes, or 25 parts by weight;
Acid, salicylic, 1 gramme, or 1 part by weight;
Distilled water, enough to make 100 cubic centimetres, or 100 parts by weight.

This solution in the Hôpital Cochin is used by an apparatus which, under the directions of Dujardin-Beaumetz, is made by H. Gallante, of Paris, and which, though much more complicated, is no doubt more convenient than the apparatus of Bergeon. A description of this apparatus with figure may be found in *Les Nouveaux Remèdes*, November 24, 1886.

By M. Bergeon himself four or five litres of carbonic acid gas, which had been passed through two hundred and fifty to three hundred grammes of the sulphurous mineral water, were thrown into the rectum twice in each twenty-four hours. In the Hôpital Cochin the amount of gas injected varies from one to four litres at each séance. The apparatus used at this hospital is superior to that used in the original method, because it allows a definite amount of sulphuretted hydrogen to be introduced with the gas. The amount of sulphuretted hydrogen used in the Hôpital Cochin is not positively stated, but about fifteen cubic centimetres of the solution of sulphide of sodium (equivalent to one hundred and fifty cubic centimetres of sulphuretted hydrogen) seems to be the amount employed at a séance.

In his original communication, M. Bergeon claimed that the success of this mode of treatment is very rapid and remarkable ; it is stated that the cough immediately diminishes, the expectoration lessens or even ceases, the appetite increases, the sleep becomes undisturbed, the fever abates, and the bodily weight greatly increases.

In the discussion before the Société de Thérapeutique, at the meeting of December 8, 1886, Dujardin-Beaumetz confirmed the statements of M. Bergeon, and further said that the amelioration must be due to the sulphuretted hydrogen, as he had repeatedly tried injections of pure carbonic acid without doing good.

The French reports indicate very strongly that the drug acts, not as was originally expected, upon the parasite of phthisis, but upon the inflamed diseased lung-tissue itself, since Dujardin-Beaumetz states that there is no lessening in the number of bacilli in the sputa : moreover, great benefit is obtained in the treatment of cases of simple chronic

bronchial catarrh. This is also confirmed by the studies of M. Chentemesse, of the Hôpital St. Antoine, who affirms distinctly that there is no lessening of the bacilli, and that very marked relief has been afforded to asthmatic patients. Moreover, *no evidence is forthcoming to show that sulphuretted hydrogen is poisonous to the tubercular bacillus*. It is, so to speak, the natural gas of putrefaction, and without definite proof cannot be considered to be even probably inimical to low organic forms.

Dr. James Henry Bemett has published in the *British Medical Journal*, December, 1886, a paper upon Bergeon's method of treatment, in which, however, he adds nothing to our knowledge of the subject, merely stating his own experience in a single case of asthma.

In this city the method of treatment has been used in the Philadelphia Hospital in a large number of cases, especially in the wards of Dr. Bruen. A personal inspection of the result shows that the statements made by the French observers are correct, and there seems to be no doubt that under the treatment there is rapid alteration of some cases of phthisis for the better. In the Philadelphia Hospital the solution at first used contained five grains of the chloride of sodium and five grains of the sulphide of sodium, but at present the strength has been doubled, so that in the Wolffe's bottle, through which the carbonic acid passes, ten grains of each of the chemicals is put. Once charging of the Wolffe's bottle is made to suffice for a number of patients, each of whom receives at each treatment from three to five pints of carbonic acid. It will be seen at once that in this method the amount of sulphuretted hydrogen received by the patient is unknown and variable, and is very small. A personal inspection of the carbonic acid used showed that it is very impure, the odor indicating that it contains sulphurous acid. Chemical testing has shown that the gas coming from the Wolffe's bottle contains sulphuretted hydrogen, the odor of which is also distinctly present. The chloride of sodium in the solution would appear to be superfluous, the carbonic acid reacting directly with the sulphide of sodium. The following formula represents the probable change: $\text{NaS} + \text{CO}_2 + \text{H}_2\text{O} = \text{NaCO}_3 + \text{H}_2\text{S}$.

Such is the evidence which I have been able to gather from the experience of others in regard to Bergeon's treatment, and it is sufficient to indicate that we are in the presence of a very important improvement of, or rather a very important addition to, medical therapeu-

tics. It is of vital importance to decide the mode in which the treatment acts. The experiments of Dujardin-Beaumetz show that the carbonic acid is not the active agent, and that the good achieved is produced by the sulphuretted hydrogen. Reasons already assigned are sufficient to make it improbable that the good achieved is the result of any parasiticial influence. All clinical experience indicates that heredity is in the production of consumption a vastly more important factor than is any poison introduced into the body from without. Only a portion of the medical profession believes in the active contagiousness of phthisis, whilst the experience of any life insurance company affords a firm foundation for the belief in the heredity of the disease. If the bacilli really are the exciting cause of phthisis, the susceptibility to their action must be a more important factor in the production of phthisis than are the bacilli themselves. There is at present, then, no proof that the sulphuretted hydrogen, when it does good in phthisis, acts by killing the bacilli, and there is still less proof that it in any way increases the direct resistive powers of the individual to the action of the bacilli. In some acute and chronic diseases of the skin, local applications of sulphur act with the most astonishing rapidity and effectiveness, and the thought naturally suggests itself that in Bergeon's treatment of consumption good is achieved by the action of the sulphuretted hydrogen upon the inflamed lung-tissue, or in other words, that the plan of treatment is simply a means of making an application of sulphur to the pulmonic mucous membrane and tissue. This thought is not merely of speculative interest, but also of practical importance, for it suggests that the method of treatment will prove of value not only in consumption but in various forms of chronic or subacute affections of the lungs. This is confirmed by what experience we have. Cases of asthma and pulmonic catarrhs have already been quoted in this article as having been published in the French journals, in which the remedy has proven of the greatest service.

I saw in the Philadelphia Hospital one case of asthma with chronic catarrh and emphysema in which the administration of the rectal injections had been followed by the most pronounced relief. In another case, of catarrhal pneumonia with an enormous amount of purulent expectoration, and general symptoms so bad that a fatal prognosis had been given, the administration of the remedy was at once

followed by rapid lessening and even cessation in the purulent secretion, and in a short time by convalescence.

As an important illustrative case, I cite one from my own recent experience. Mrs. L., over 70 years of age, received a severe contusion of the side in a railway accident, which was followed by pleurisy, in turn followed by bronchial pneumonia, with an enormous expectoration. She has been under my care for nearly three months, and though often temporarily benefited by various remedies, had failed to properly respond to the most careful treatment that I could give her. The expectoration remained exceedingly profuse, amounting sometimes to a pint in the course of twenty-four hours, although very irregular. The general symptoms were very bad: sinking spells were frequent and alarming. I finally told the family that she would die, unless the gaseous injections would do something for her. Within forty-eight hours after the use of the gas, the expectoration notably decreased; the expression of the patient's face changed entirely, and at present writing, fifteen days after the use of the sulphuretted hydrogen, she is expectorating not one-sixth the quantity she did formerly, has regained the natural expression of her face and color of her skin, as well as her appetite, and a fair amount of strength, and seems to be convalescent. A notable fact in this case is that the injections of gas relieve in a few minutes the sense of suffocation and sinking the patient formerly felt in the mornings. The secretion of urine was sensibly increased. As tested on three occasions, the subnormal temperature rose 0.4° F. within the half-hour after the exhibition of the gas either by the mouth or rectum.

One difficulty with Bergeon's method of treatment in private practice is the cumbersome apparatus and the skilled labor required for the preparation of the carbonic acid. A plan which would avoid this and reach the same result in regard to the lung-disease is certainly a desideratum.

According to Gay-Lussac and Thénard, water at 52° Fahrenheit will absorb three times its volume of sulphuretted hydrogen. To prepare this solution, the gas, previously washed with water, is passed alternately through each of two bottles half filled with water; while it is being passed through one, the other is closed with the stopper and shaken, to insure complete absorption; and thus the process is continued till the water is completely saturated. One of the bottles is then completely filled with the liquid, and re-

moved with the mouth downwards. The resulting solution is a colorless liquid, having the odor of putrid eggs, and a sweetish taste. When heated, it evolves the whole of the gas. Bottles containing the solution of sulphuretted hydrogen should be habitually laid upon their side.

A priori, there is no evident reason why this solution, if injected into the rectum in proper doses, should not exert all the influence upon the pulmonic tissue obtained by Bergeon's treatment. I have tried the solution thrown into the rectum, and found it free from any irritant action. The habitual use of injections two or three times a day is, however, very disagreeable to most patients, and the questions naturally arise, Is there any necessity of administering the drug by the bowels, and will not sulphuretted hydrogen water be taken without too much repugnance by the mouth and without nauseating? At the various sulphur springs large quantities of such water are habitually drunk by the patients. Led by such considerations, I have tried the sulphuretted hydrogen water in as many cases as I have been able to get, and so far, when properly given, it has been usually taken readily, and has not disagreed with the stomach. Some persons, however, will not tolerate it at all. The effects upon the disease have seemed to be entirely similar to those produced by the injections. At first a half-ounce, afterwards an ounce, of the saturated solution of the sulphuretted hydrogen should be placed in a tumbler, and two or three ounces of carbonic acid water be run into it from a highly-charged siphon, the whole being drunk while effervescing. This may be given three to five times a day, so that the patient will receive daily between a half-pint and a pint of the sulphuretted hydrogen gas. Injections of gas into the rectum produce in some persons more or less violent attacks of colic, especially if given at a time when the food is well down in the intestinal tract. Thus, in the case of Mrs. L. the night injection caused so much pain that it could not be borne, although the injection in the morning was actually pleasant. The two methods of administration were then combined, the gas injection being given in the morning and the sulphuretted hydrogen water in the afternoon and evening. Within the last forty-eight hours, at Mrs. L.'s earnest request, the gas injections have been entirely abandoned in favor of the exhibition by the mouth. Of course the two methods are simply different ways of accomplishing the same result, and

may be variously combined or substituted for one or another according to the peculiarities of the individual cases within the last day or two.

It is a matter of the greatest importance to fix definitely the dose of sulphuretted hydrogen gas. With the method employed in the Philadelphia Hospital this cannot possibly be done. The solution employed in the Hôpital Cochin, whose formula is given in the first part of this article, seems to be superior to the solution of the chloride and the sulphide of sodium, in affording known quantities of sulphuretted hydrogen. Even with it, however, the chemical reactions are so slow that practically it is scarcely possible to decide how much of the gas is evolved in a brief time. The substitution of sulphuric for tartaric acid would largely obviate this. When the medicine is given by the mouth exact dosage is possible. In Mrs. L. five ounce-doses appeared to be too much. She is now taking three doses daily.

In a recent number of the *British Medical Journal* it is stated that M. Morel affirmed before the Biological Society of Paris that the dose of the gas is twenty-five cubic centimetres. That it is not incapable of doing harm is shown by the experiments of M. Peyron, who injected into the rectum of a dog one hundred and fifty cubic centimetres of a saturated solution of sulphuretted hydrogen in two doses at intervals of three minutes. Symptoms of poisoning began to be manifested within two minutes, and death took place in ten minutes. Another dog died quickly after two injections of the same strength, given at intervals of twelve minutes, while two others, in whom only very small quantities of the gas, or large quantities very much diluted, had been injected, experienced only slight inconvenience, and rapidly recovered. Not long since, in the University Hospital in Philadelphia, about one quart of a mixture containing equal quantities of carbonic acid and sulphuretted hydrogen were injected into the rectum of a patient; within three minutes the man was unconscious and apparently dying. The breathing-rate was one hundred per minute, and the respirations so shallow that they could scarcely be observed. The pulse at once became very rapid and feeble, and even imperceptible at the wrist, while a very marked odor of sulphuretted hydrogen appeared in the breath. Under treatment the symptoms all subsided in about fifteen minutes. The rapidity with which these symptoms developed and with which they subsided indicates that when the gas is thrown into the rectum

its effect is very immediate and fugacious, and it is entirely possible that the more continuous influence of rectal injections of the aqueous solution of sulphuretted hydrogen may act better in pulmonic diseases than does the short influence of the gases now administered. Of course poisoning by overdoses of sulphuretted hydrogen is a no more valid objection to its proper use than is opium poisoning to the employment of opium.

1925 CHESTNUT ST., PHILADELPHIA,
April 2, 1887.

CUNEIFORM OSTEOTOMY FOR ANTERIOR CURVATURE OF BOTH TIBIÆ AND BOTH FIBULÆ.*

BY MILTON JOSIAH ROBERTS, M.D.†

(Concluded from page 163.)

CLINIC OF OCTOBER 26.

I THOUGHT it might be of interest to you to bring before you to-day the little colored boy upon whom we operated a week ago for the correction of anterior tibial and fibular curvatures. It is always well to know the history of a case subsequent to an operation in order to correctly judge of the value of the operation. An operation may at the time of its performance appear to be a very brilliant one, but in the light of subsequent events may take on an entirely different appearance. You will remember that we performed four cuneiform osteotomies upon this patient, requiring eight complete divisions of the bones of the leg. Fortunately for us, Dr. McNutt was able to provide a bed in the babies' ward for our patient, so that his subsequent condition could be carefully watched. Dr. Vinton, who has had charge of the patient since the operation, reports his condition as follows: October 19, after the operation, at 4.45 P.M., his temperature was $98\frac{3}{8}^{\circ}$, pulse 89, respiration 30. On October 20, at 4 P.M., his temperature reached 101° , but quickly began to fall. On the 22d inst., the third day after the operation, his temperature fell to normal, and has remained so ever since. There is no indication of any suppuration, the dressings re-

* A Clinical Lecture delivered at the New York Post-Graduate Medical School and Hospital, October 26 and December 18, 1886.

† Professor of Orthopædic Surgery and Mechanical Therapeutics, Visiting Orthopædic Surgeon to the City Hospital on Randall's Island, Consulting Orthopædic Surgeon to the Woman's Hospital, Brooklyn, etc. Phonographically reported by J. J. Sullivan, M.D.

maintaining perfectly dry and clean. He is now eating and sleeping well, and all his bodily functions seem to be normally performed. We will endeavor to keep this patient under observation, that you may note for yourselves the progress of the case.

Now, with regard to the correction of anterior tibial curves. I know you will hear a great many physicians say it is a perfectly simple matter to overcome these deformities by means of operations performed with the chisel and mallet. I have yet to see, however, the report of any cases in which the

the jars which are communicated to the bony framework by means of the repeated blows of the mallet upon the chisel are transmitted to the central nervous system, and necessarily are the cause of more or less shock. I have known of more than one patient operated upon for tibial curvature with the chisel and mallet who has lost his life in consequence of the operation, and who, at the time of the operation, was in perfect health. Such disastrous results, however, are not as likely to find their way into medical literature as those of a more pleasing nature.

FIG. 1.



Showing result of operation.

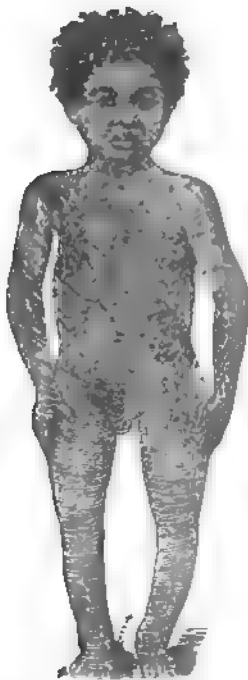
deformity was so exaggerated as in this case where it has been completely rectified. You can readily appreciate this when you recall to mind the difficulties which the surgeon must necessarily encounter when he endeavors to remove a wedge-shaped piece from a bone by means of a chisel. At best it can only be accomplished in a bungling and unworkmanlike manner, for a chisel is not the tool with which to remove V-shaped pieces from any hard substance. In any of the mechanic arts a workman desiring to remove a V-shaped piece from any hard substance would never think of resorting to the use of a chisel. Then, again,

CLINIC DECEMBER 18, 1886.

I have again brought before you the little colored boy upon whom I operated about eight weeks ago, this time with the dressings removed. He has not had an untoward symptom since the operation, and union of the bones and soft parts has taken place without the formation of pus. As you see, when placed in the position in which he was originally photographed, the anterior deformity has been perfectly corrected. (See Fig. 1.) You will remember on the occasion of the operation I directed your attention to the fact that this child presented a double deformity, viz.,

anterior curvature of both tibiae and both fibulae, in conjunction with a slight degree of bow-leg deformity. These deformities, the anterior and the lateral, it should be borne in mind, lie in two different planes. In the anterior deformity the right and left plane of the leg is distorted, while in the bow-leg deformity the mesial plane of the leg is distorted.* The anterior deformity of the leg-bones has been perfectly corrected. No attempt, however, was made to correct the bow-leg deformity at the time of the operation. When placed upon his feet (see Fig. 2) you will

FIG. 2.



Showing bow-leg deformity.

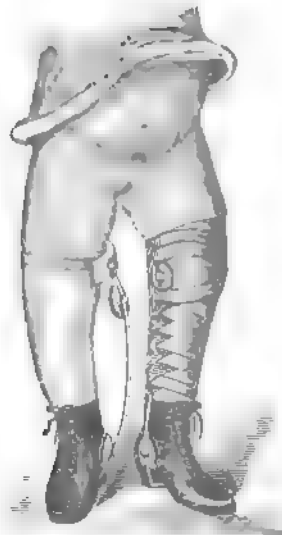
readily appreciate the persistence of this deformity. And it is to a practical point connected with the correction of deformities lying in two planes to which I wish now to direct your attention.

Had I deemed it perfectly safe to have divided the bones of the tibiae and fibulae just distal to their proximal epiphyses, on the occasion of the operation for the correction of the anterior deformity, I could have readily corrected the bow-leg deformity, and he would now have been presented to you with perfectly straight legs. It has not, however, been shown, so far as I am aware, that it is perfectly safe to endeavor to straighten at one sitting a bone which is deformed in more than one plane. The thought which has al-

ways deterred me from the multiple cross division of long bones has been the fear of interfering with their nutrition. I am not at all satisfied, however, that it is not feasible to undertake such an operation, but until I have knowledge of its reliability from other sources, I shall not hazard such a procedure upon a living human being. It would be of great practical value to perform a series of experiments upon the lower animals in order to determine the limitations to multiple cross-sections of the long bones. If it can be demonstrated, as a result of these experiments, that we can make a complete section of a long bone in two or more planes without interfering with its nutrition, nothing will be simpler than the straightening of long bones that are deformed in more than one plane. Experiments on living human beings should never be undertaken unless they are legitimate, and experiments only become legitimate when, by means of a rational line of thought, observation, or experimentation, the conclusion is reached that they are feasible. Thus reinforced, we feel confident of the justice of our undertaking, and experimentation then takes on the garb of legitimacy.

What I propose to do in this case, however,

FIG. 3.



Bruce's bow-leg apparatus.

is not now to submit the patient to a second operation for the correction of his bow-leg deformity, but to correct this by mechanical means. For this purpose I shall make use of an extremely simple form of apparatus, the invention of Dr. Charles E. Bruce, one of the assistants to the orthopaedic chair in this in-

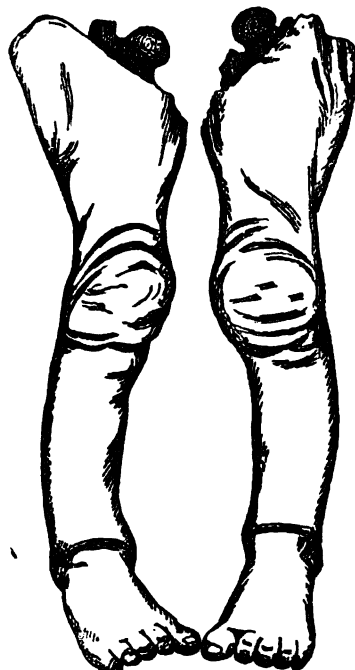
* Anatomical Geometry and Toponomy, etc.

stitution. This apparatus consists (as will be seen by reference to Fig. 3, right lower extremity) of three pieces, with joints corresponding to the ankle and knee, and is placed upon the inner aspect of the limb. It is made of very light pieces of steel. The first segment of the instrument extends from the sole of the shoe to the ankle-joint, and is riveted directly to the sole of the shoe in front of the heel. The second segment of the instrument is a narrow strip of stiff steel, having a curvature, which approximates in degree that of the deformity to be corrected, only that it is in the opposite direction. The third segment extends a short distance above the joint. It is provided with a curved piece, riveted at right angles to the shaft of the instrument, this curved piece serving to keep the upper part of the instrument in position on the limb. Now a roller-bandage is carried about the limb and over the instrument, the latter being drawn up close to the limb, as shown for the left lower extremity, Fig. 3. Instead of using a roller-bandage to secure the apparatus in position, I prefer to draw on an elastic cap, which extends from a little above the ankle-joint to a point just below the knee-joint. By the use of an elastic cap of this kind much time is saved in applying and removing the apparatus. It is also not so apt as the roller-bandage to get out of position. The curved shaft of the instrument being made of spring steel, and tempered, when straightened out and drawn close to the limb gently tends to return to its former curved form. The pads attached to the instrument opposite the ankle- and knee-joint serve as points of counter-pressure, and tend to straighten the limb. This apparatus should be worn day and night, but it should be removed each day, not only for the purpose of cleanliness, but in order to manipulate the muscles, as the prolonged wearing of bandages, even though the patient exercises considerably, is likely to cause more or less muscular atrophy.

The appropriateness of the idea of applying force in one direction to the shafts of the tibia and fibula, and a counterforce in the other direction to the epiphyses of these bones, as is accomplished by Dr. Bruce's instrument, will be understood when we come to consider the anatomical relationships of the parts involved in bow-leg deformities. Two or three years ago I made some dissections of the limbs of the lower extremities of very young children, which convinced me that in these deformities we must at least not always expect to find the shafts of the tibia

and fibula curved outward. Fig. 4 represents the dismembered lower extremities of a

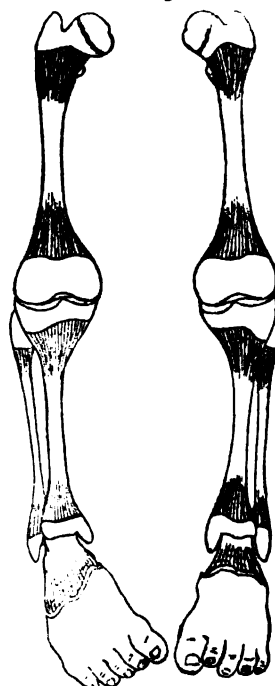
FIG. 4.



Lower extremities dismembered.

child one month old. From an inspection of this figure it would appear that the tibial

FIG. 5.



Same, denuded.

shafts were curved outward. This impression is dispelled, however, when we come to re-

move the flesh from the bones. Fig. 5 represents the bones of the lower extremities, represented in Fig. 4, freed of their soft parts. From an examination of this figure it will be seen that the shafts of the tibiæ and fibulæ are straight. It would appear, therefore, that the deformity was due to a tilting of the epiphyses upon their diaphyses, or to some alteration in the epiphyses.

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*CLINICAL AND PHYSIOLOGICAL NOTES
ON THE ACTION OF CANNABIS
INDICA.*

BY HOBART AMORY HARE, M.D.*

CANNABIS INDICA has been before the profession for many years as a remedy to be used in combating almost all forms of pain, yet, owing to the variations found to exist as to its activity, it has not received the confidence which I think it now deserves. At present certain improvements made in the method of obtaining the extract from the crude drug have very materially increased its reliability, so that by selecting an article made by a responsible firm we may be fairly sure of receiving a preparation in which we can place confidence. Within a few years this drug has become particularly prominent in connection with its use in migraine, particularly when used in conjunction with gelsemium, although of the two remedies the hemp is by far the most active agent in subduing the pain and preventing other attacks.

Heretofore the profession has used the remedy in such cases purely from an empirical stand-point, but I shall in a moment explain more fully its true physiological action. Aside from this, however, I have certainly seen very severe and intractable cases of migraine successfully treated by this remedy, not only in regard to the attack itself, but by acting as a prophylactic. The best use of the remedy under such circumstances is as follows, in case the drug obtained be fairly active. If the attacks are frequent then the remedy should be used constantly in small doses, in such a way that the patient is not conscious of any influence of the drug, and about $\frac{1}{8}$ of a grain of the solid extract may be taken night and morning, or, if this produces any tendency to sleep, the whole amount may be taken at night. At

the beginning and during the attack it should be freely administered, until either the pain is diminished or very marked symptoms of its physiological action assert themselves; and that this line of treatment is not one calculated to produce serious results is proved by my own experiments, and by the fact that so far no case of fatal poisoning from its ingestion has been recorded as occurring in the human being.

I myself have taken as much as one grain of the solid extract of a very active preparation without producing any disagreeable symptoms other than that of a deep sleep, which lasted for nearly eighteen hours, preceded by a period of great hilarity, which did not pass into any sensation of dread, such as has been described by some persons.

When gelsemium is used in addition to the hemp, its usefulness is limited only to its action in warding off an immediately impending attack, and I do not believe it possesses much power for good unless it be given when the first symptoms of the malady appear. Its exceedingly poisonous properties necessarily prohibit any repetition of a dose, and for this and the reasons above stated the drug should be administered in one single dose of 15 to 20 drops of the tincture at the first sign of an attack.

Cases of migraine treated in this way, when the disease does not depend on any distinct organic lesion, are in a large proportion of instances either entirely cured or greatly benefited, the attacks even when they recur being considerably farther apart.

In neuralgias depending on a condition of debility in nursing women and in overworked men cannabis indica alone acts very favorably, not by acting in any way as a stimulant to the system, but rather by allaying any irritability of the nerve-trunks. Again, in many cases of irritative cough, depending either upon some nervous irritability or upon some actual irritated condition of the air-passages, cannabis indica will be of service in allaying the troublesome symptom, and is often found useful in the chronic winter cough of old people, provided no great outpouring of mucus or liquid is in the lungs.

In certain stages of phthisis it is a very valuable remedy, not on account of any influence possessed by it on the pathological processes, but by quieting restlessness and anxiety, and by turning the mind of the patient to other channels. Indeed, in cases of advanced phthisis I believe it would be justifiable to push the drug almost to the condition

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known as euthanasia, and this has been done quite frequently by many practitioners. Under these circumstances, the patient, whose most painful symptom has been mental trepidation, may become more happy or even hilarious.

The advantages in its use over that of opium consist chiefly in the absence of prostration and nausea after its ingestion, and in the partial lack of soporific power which it possesses as compared to the opiate, for in certain cases sleep is not always desirable when pain is to be removed. That cannabis indica has, however, marked powers as a soporific is not to be denied. Added to these advantages is the fact of its failure to produce serious symptoms even if very large doses be taken, although I have found the efficient dose of a pure extract of hemp to be as powerful in relieving pain as the corresponding dose of the same preparation of opium.

That it is capable of producing a habit there can be no doubt, although whether its devotees are as devoted as are those of opium I cannot say. In my own practice I have seen a case of a young man who took his first dose as an experiment, and who afterwards had such a constant desire for its repeated use that he was forced to abstain from it entirely. He also said he could readily understand how the drug might have devotees, and that the pleasurable sensations excited were far preferable to those of alcohol.

During the time that this remarkable drug is relieving pain a very curious psychical condition sometimes manifests itself; namely, that the diminution of the pain seems to be due to its fading away in the distance, so that the pain becomes less and less, just as the pain in a delicate ear would grow less and less as a beaten drum was carried farther and farther out of the range of hearing.

This condition is probably associated with the other well-known symptom produced by the drug, namely, the prolongation of time.

Turning from the clinical stand-point of the drug to its physiological effects, we find that its clinical uses rest on a scientific basis, and I shall, therefore, detail one or two experiments showing in what manner the drug acts.

If a considerable quantity (mx)* of the fluid extract be given to a twenty-pound dog, by the jugular vein, in the course of two or three minutes he becomes very playful and happy,

* mviii of this preparation is the dose by the mouth for an adult man.

and gambols over the floor. In the course of about five minutes more there appears a slight stagger in the walk, which gradually increases, and is most marked in the fore legs, the condition of mental exhilaration continuing. Soon after this equilibration is partly lost, for the animal, sitting on its haunches, places its fore feet wide apart; nevertheless, in the course of ten minutes more he seems to partially recover his balancing powers, and to be as happy and frolicsome as ever, barking and running. In the course of twenty or twenty-five minutes more he vomits, and the swaying and staggering reassert themselves, now affecting both hind and front legs. This condition rapidly passes into a drowsy state, which, in turn, deepens into profound sleep, from which it is difficult to arouse the animal to consciousness, although the reflexes are markedly accentuated, particularly to sounds. This sleep lasts for many hours, and finally the dog wakes up himself again. In some instances a lack of co-ordination, due evidently to failure of sensation, appears, so that the animal places his feet on the floor as if it were uneven, or higher or lower than it is.

That the drug may be given in enormous amounts by the jugular vein in the dog without producing death is proved by the fact that I have injected as much as 10 c.c. of the fluid extract without producing serious symptoms. Thus, at 1.20 P.M. the injection was given. At 1.25 the dog was sound asleep and groaning, as if having bad dreams. At this time pinching the ear called out no sign of discomfort, and the respirations were eight per minute.

At 5 P.M. the animal was as sound asleep as before, but was unfortunately killed by the laboratory assistant, owing to a misunderstanding of my orders. Just before death the respirations had risen to ten per minute, and several movements had been made by the dog.

Again, I have given by the jugular vein 22 c.c. of a fluid extract, which I knew to be active, without producing death or any marked change in either arterial pressure or pulse-rate, as may be seen from the following condensed table:

DOG; ETHERIZED; WEIGHT, 40 POUNDS; FULL GROWN.

Time.	Drug.	Pressure.	Pulse.	Remarks.
3.01.10	114-144	186	
3.01.20	114-142	180	
3.01.30	116-142	192	
3.01.40	2 c.c.	144-100	192	Injection begun.
3.01.56	86-136	198	Injection ended.

Time.	Drug.	Pressure.	Pulse.	Remarks.
3.02.06	118-154	168	
3.02.16	134-154	150	
3.02.26	132-150	162	
3.07	126-138	156	
3.09	126-142	144	
3.09.10	126-140	146	
3.09.20	126-142	144	
3.09.38	128-148	150	Vagi cut in order to determine if the slowing was due to pneumogastric stimulation.
3.09.48	136-164	168	
3.11	134-166	180	
3.12	168-194	162	
3.12.23	5 c.c.	168-190	150	Injection begun.
3.12.35	110-190	162	Injection ended.
3.12.45	78-112	162	
3.13.05	164-178	180	
3.13.25	176-184	162	
3.25	154-172	186	
3.35	148-170	162	
3.37	148-168	180	
3.37.12	8 c.c.	162-174	144	
3.37.22	166-88	132	
3.37.32	56-84	156	
3.39.00	88-136	180	
3.41.10	126-156	174	
3.41.20	126-150	174	
3.41.37	7 c.c.	138-150	144	Injection begun.
3.41.42	136-154	138	Injection ended.
3.41.52	148-118	168	
3.42.02	90-140	150	
3.42.12	104-70	168	
3.42.22	98-68	156	
3.42.5	88-116	96	
3.44	118-92	102	
3.44.16	10 c.c.	98-124	105	Injection begun.
3.44.20	74-146	88	
3.44.40	54-34	96	
3.45	28-24	66	
3.45.10	26-22		Pulse imperceptible; heart stopped; respiration continued for ninety seconds after heart.

The only influence exercised on the circulation by the drug consists, as is seen by the above table, in a slight slowing of the pulse and fall of arterial pressure. That the slowing is due to direct cardiac depression and not to stimulation of the vagal centres is proved by the failure of the pulse to return to its normal rate when the vagi were cut. The fall in arterial pressure seems to depend entirely on the failure of cardiac power.

The 22 c.c. were given between 3.01 and 3.41, in four doses, ranging from 2 to 8 c.c. At 3.44 10 c.c. more of the extract was given rapidly into the jugular, producing death in about sixty seconds. In other words, it required 32 c.c. of the strong fluid extract, by the jugular vein, to produce death in a dog weighing forty pounds.

When we consider that this extract was active in doses of m^{viii} to man, it must be conceded that this drug has but slight lethal power.

Respiration continues after the heart ceases to beat in those cases in which the drug is sent into the cardiac apparatus *en masse* through the jugular vein; but when death is not due to this cause, there seems to be a simultaneous failure of heart-power and respiration.

The action of the drug on the nervous system is, of course, the most interesting part of the investigation, and we find that in the frog, as in the dog, the greater portion of its action is on the brain.

When a very large dose of the fluid extract (m^{v} to m^{xx}) is given hypodermically to the frog, it immediately becomes quiet, and in a moment or two will lie flat on its back, apparently in a deep sleep, with slow and full respirations. That the condition of relaxation is due to sleep or cerebral depression was proved by oft-repeated experiment, reflex action being increased very markedly, proving that the motor and sensory nerve-trunks were unaffected, as well as the motor and receptive centres in the cord. Reflex action, however, rapidly diminishes after remaining for five to ten minutes, and total relaxation comes on. That this is not due to motor-nerve or spinal palsy is proved by electric stimulation of the cord and nerve-trunks, which is always followed by contractions of the tributary muscles. The loss of reflex power, therefore, must depend on depression of the sensory apparatus, and further experiment confirms this reasoning, for, as was again and again proven, the drug, when applied locally to the exposed sciatic, invariably prevented the passage of the most powerful impulses from the foot to the cord. The poisoned foot could be burnt off without any response, while if the opposite leg was burned the batrachian instantly leaped away, using both the poisoned and unpoisoned leg, showing again that cannabis indica does not have much effect on the motor nerve-filaments even when directly applied to them. Under these latter circumstances, however, the poisoned leg is not moved quite as rapidly as its fellow, showing that the motor nerve has not escaped absolutely the direct application of the drug. That the sensory tract of the cord is affected was proved by tying the common iliac in order to protect the nerve-trunks of the posterior extremities, and then injecting the poison into the body. Under these circumstances there is, as usual, the first stage

of heightened reflex action, followed by corresponding depression of the same, and irritation of the protected sensory nerve fails to call forth any response from the spinal cord.

To summarize these conclusions, we find that cannabis indica produces in the lower animals a period of happiness followed by more or less deep sleep, according to the amount of the drug. That in both the dog and frog we have a stage of heightened reflex action following the dose.

That this increased reflex action is replaced by reflex palsy which is not due to motor-nerve or motor-spinal-tract palsy, but to failure of the sensory side of the cord and nerve-trunks.

That the chief action of the drug is upon the centres in the cerebrum, that the action on the sensory tract of the spinal cord and nerve-trunks is secondary to its cerebral action.

Before closing this paper I desire to call the attention of practitioners to the local anæsthetic action of this curious substance. As already detailed, when applied directly to the nerve-trunks it paralyzes them, and I have found that when applied to the mucous membrane of the tongue in considerable quantity it diminished sensibility to a considerable degree. Dentists, I am told, constantly use it for sensitive dentine. The drug is too irritating to be used on delicate membranes such as the eye, for I have proved in the dog that it is apt to bring on severe inflammation.

CURIOSITIES OF THERAPEUTICS.

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I. PRIMITIVE AND PSYCHO-PHYSICAL MEDICINE.

IN no way is mental evolution better exemplified than by comparison of the intellectual processes that have lifted Therapeutics from a superstition of mere barbarism to rank as a definite science. Among all early peoples we find medicine to have been intimately interwoven with those mental phenomena that procure Psychomancy: it was occult, hence a factor of religious belief developed by contemplation of the unknown mysteries of Life and Death. The same also obtains among the primitive races of the present, and the *Shams* of Kalmucks, Jakuts, and Ostiaks; *Tadibes* of Samojedes, Tchuktchi, and Tun-

gusi; *Hantus* of Malays and Dyaks; *Angekos* of Esquimaux and Innuits; *Fetiches*, *Voudoos*, and *Obi-men* of negroes; and *Powahs*, *Tlaquillahs*, *Wicaste-Wakans*, "*Spirit*" and "*Medicine-men*" of Indians;—all are exponents of therapy, at the same time exercising semi-sacerdotal functions. The same is in some degree true also of enlightened nations, as Mohammedan *Hakims*, Hindu *Brahms*, Buddhist *Bonzes*, etc., profess equal readiness to minister to a body diseased or soul disordered.

The Psychomancy of the North American savage, which, for personal reasons, is selected as a type, is universally known under the pseudonyme of *Medicine*, a term as inappropriate as it is misleading, and adopted doubtless through inability to comprehend the subtleties of a strange tongue; an error that results from the accordance to primitive people, the same mental *calibre*, and general associations of ideas, as pertain to advanced civilization and development. *Medicine* as a science finds no equivalent in any savage tongue,* and the words so translated have reference solely to the occult, mysterious, magical, and supernatural. *Medicine*, in the sense used, is of broad significance and varied application, embracing *psychology*, *clairvoyance*, *ecstasism*, *spiritism*, *divination*, *demonology*, *prophecy*, *necromancy*, and all things incomprehensible, consequently a true *Shamanism*;† it is the primitive philosophy of life and matter, and comprehends the *animate* and *inanimate*, *organic* and *inorganic*, *absolute* and *imaginary*. It holds the entire universe is permeated by spirits or essences more or less human in character, who determine the fortunes of men and operations of Nature,‡—familiar controlled by no fixed laws and in the main irresponsible, yet holding some occult and indefinable relationship one to another and to one Supreme Power, who figures under a variety

* For instance, the famous "*Medicine Dance*" of the Dacotahs is by them termed *Wacipi-Wakan*, literally "*Dance of Spirits*." *Econg-Wakan*, rendered "*medicine-making*," is properly "*conjuring with spirits*." *Wicaste-Wakan*, far from being "*Medicine-man*," should be translated "*One Familiar with Spirits*," and the same is employed to designate the civilized clergyman or missionary. The white physician, or the surgeon at the agency and military post, is known as *Pisihuta-Wicaste*, or "*One Familiar with Herbs*" or vegetable growths. So, too, the Ojibbewa or Otchipwe *maskiki*, far from being "*medicine*," has no other significance than the Dacotah *pisihuta*.

† A word derived from the Jakut through the Russian, and adopted by lexicographers as a synonyme for polytheistic myths.

‡ See Livingstone's "*Zambesi*," pp. 545 to 547.

of titles and guises, according to vagaries of race and language.*

The theory whereby inanimate and inorganic objects are endowed with familiars, pertains to all primitive peoples, and it is this that requires the belongings of the warrior to accompany him to the grave in order that he may have the phantoms thereof secured to him in his life beyond.† In this the spiritism of the savage is more consistent and complete than that of civilization. Shakespeare describes the ghost of Hamlet's father as wearing his "beaver up," and the primitive man sees no reason why a helmet should not possess a spirit as well as the warrior who places it upon his ghostly head; and in the New Zealand tale of Te-Kanawa we see the same exemplified, in that the hero devoted his personal ornaments to the spirits, who removed the essences, but left to him the substance.

Again, the impalpable essences of inanimacy may, and do, separate, appearing at

* *Manit*, *Manito*, or *Manitou* is not a universal appellation, as supposed, but peculiar to the Algonkin races; neither does it pertain to the *Supreme Power* alone, since it is *generic*, and equally applicable to all spirits. *Kitch-Manito*, however, is the "Great Spirit" of the Otchipwes, as *Owi-wis-i-manito* is of the Shawnees. *Wakan-Tanka* is the "Chief Spirit" of the Dakotahs; *Pah-ha-shun* of the Kiowas; *Ah-ho-hi-tou* of the Pawnees; *Yehl* of the Thlinkets; "*Old Man*" of the Blackfeet; "*Boy in the Moon*" of the Chepwyans; etc.

† In this connection may be traced the history of funeral offerings from its source in a crude savage philosophy down to a mere formality or symbolism. The ancient Aryan placed the implements of the individual in the grave that they might serve him in the future life. The modern Hindu has so far progressed as to lay a bit of yarn upon the funeral-cake, saying, "May this apparel be acceptable (or serve thee)." Ovid tells us that in his time the offerings had been merged into an affectionate and sentimental ceremony to appease the shades, — a sprinkling of flowers, corn, and salt:

"Parva petunt manes—pietas pro divite grata est
Munere. Non avidos Styx habet ima deos."

The early Christians buried clothing and ornaments, and playthings and toys with children, exactly as do the Dakotahs, Crees, Otchipwes, Assinoboines, and other red races to-day. The Finns, Lapps, and Chinese provide their dead with money and apparel; and the latter annually spread a feast to banquet the souls of the departed, allowing sufficient time for the phantoms of the food to be removed, when they themselves devour the substance. Precisely the same superstition obtains in many civilized districts; and in Brittany, on the eve of *Fête des Morts*, the fire is made up, the hearth swept, and the table laden with delicacies to feast the manes of departed friends. And, when we see wreaths and flowers laid upon the tomb or coffin, or strewn within the open grave, we recognize the act as a relic of the crudest savage psychomancy, and an offering, changed in signification, it is true, but nowhere broken in historical sequence.

considerable distances from their substances; and if the latter are broken, worn out, or destroyed, the spirit is no way affected thereby.‡ It is this philosophy that causes the savage to devote only his effects belonging to the service of the unknown, as exemplified by beads, bits of tobacco, fragments of cloth, furs, skins, ribbands, etc., that, suspended from wands, bushes, or trees, or displayed upon rocks, ledges, and knolls, greet the vision of the traveller everywhere in the Indian country. Dreams, too, are regarded as real events, wherein the soul or spirit, voluntarily or involuntarily, leaves the body. Trances and catalepsies are wholly involuntary, and procured by the more powerful *manits* for some express purpose of their own; and death and sleep differ only in degree and in permanency.

Spirits are good, bad, and indifferent, as the case may be, the two latter, of course, greatly preponderating. The good receive no placatory offerings, and require little attention, since their acts, influences, and purposes are obviously for the best. The evil, on the contrary, demand constant supervision and flattery, lest the smooth workings of Nature be interfered with and the normal destinies of man perverted. Again, the evil genii exhibit all the passions of humanity: some are bold, persistent, revengeful, malevolent beyond all comprehension, and but sparingly amenable to human influences; others, again, are weak, mild, vacillating, indifferent, easily satisfied. *Ni-ni-bon-jour*, or *Ninibonzech*, the "Wind-Genii" of the Otchipwes, though of the former class, was once included among the latter. Having become soured by the punishment incurred through the displeasure of *Kitch-Manito*,§ he is no longer to be depended upon with any degree of certainty. *Pah-ah-*

‡ A peculiarity of primitive theogony is that a spirit may retain individuality while yet disseminating itself in various forms, and may demand placation in each and all. Thus the Game God of the Otchipwes is ever *himself*, at the same time his spirit partakes of as many forms as there are creatures in his domain. It will be observed that the doctrine of Trinity is by no means so new as imagined.

§ He fell into evil courses, owing to the privilege he possessed of appearing in human form. One cold day, overcome by *ishkodeuwauboo* ("fire-water"), he lay down upon the cliffs that form the entrance to Thunder Bay Harbor, Lake Superior, and fell asleep. *Kitch-Manito*, discovering him in this disgraceful condition, became greatly angered, and drove his spirit to its home in the mysterious "Wind Mountains" that form the "divide" between the Lake and Hudson's Bay, and incorporated his human frame with the rocks; and his gigantic form can still be seen limned in the outline of the adjacent mountain ridge.

kuk, his younger brother, also known as *Michabo*, "The Great Hare," appears in somewhat better light, though he too is wont to be capricious. He is the analogue of the "*Brer Rabbit*" of negro folk-lore, and the Genii of Game, and through familiars, which are but essences of himself, he controls the lives of all creatures of fur, fin, and feather, arranging their migrations, breedings, and habits in consonance with his own will. The haze of Indian summer is the smoke exhaled from his pipe preparatory to winter hibernation. The brothers are greatly feared, the elder especially so, since he retains the elements within his grasp; and it is essential both should be constantly appeased and placated.

Another peculiarity of psychomancy and primitive theology is, that no portion of the universe is exempt from familiars. Every cañon, rock, hill, mountain, lake, or stream has its individual spirits or groups of spirits, and much that is grand and picturesque in Nature, or of economic value to man, is denied the savage by reason of his superstitions. The beautiful Lake of the Woods, the pellucid Nipigon, and the northern shores of Georgian Bay and Lake Superior with their contiguous islands, abound with grewsome localities; and thousands of spots throughout the water-ways of the great Northwest are regarded with awe, and avoided as if breeding pestilence. Along the west shore of Lake *Ounipeg* (Winnepeg), especially in the vicinity of Limestone Cave Point, are numberless weird and gloomy caverns, that are deemed abodes of spirits of untold malignancy. Steep Rock, on Lake Manitoba, and the valley of *Katapaywie-Sepe* (Qu'Appelle River),* are the dwelling-places of "*Little Men*,"—creatures half a yard high, with hydrocephalic heads and hair sweeping to the ground, that are ever lying in wait for unwary humanity.† Manitoba Island, in the

* The Cree tradition is that an Indian descending the stream in a canoe heard a loud voice calling among the cliffs. Listening, he heard it again as before. Shouting a reply, an answer was elicited, and though he landed and searched the rocks, neither person nor footprints could be found. From that time forth the river has been known as *Katapaywie-Sepe*, or "Who calls?" which the *voyageurs* render as *Qu'appelle*. No savage can understand that waves of air may be turned back, reflected, and sound duplicated in echo. He knows not there is an atmosphere, and to him such reverberation must needs be the voice of the unknown and unseen, consequently *spirits*.

† "Little Men or People" are supposed to be very expert in the use of minute arrows, and a sciatica, or other mysterious pain, is often laid at their door. The same ideas formerly pertained to the mounds of the White Stone River near its junction with the Missouri.

lake of like name, is supposed to be the home of a tribe of *manits* of great power and phenomenally capricious motives, on account of the sounds that are heard proceeding from it as the result of waves washing the limestone shingle of the beach, the rock beneath being honeycombed with caverns.‡ No savage foot ever ventures to press this lovely islet, or to land upon any of the demon-haunted shores of this region, save as forced thereto by accident or stress of weather. Passing canoes keep as far away as wind and wave will permit, and if driven to the strand, the unfortunates, as the occupants of these frail barks deem themselves, hasten to placate the spirits resident at the expense of the contents of their tobacco-pouches.

Also there are acts, objects, or events mysteriously linked with the fortunes of tribes and individuals that are *Shaman*, or, as it is vulgarly termed, "*medicine*," and often emblematic rather than spiritual as viewed from a civilized stand-point, though the reverse obtains in savage minds; such are calculated, among other objects, to inculcate and perpetuate unity of tradition and purpose. Thus, the grand war council of the Dacotahs, formerly a confederation of thirteen tribes and nearly or quite twenty thousand warriors, promulgated a national *Shaman*, that required a redstone pipe, with stem of ash, to be smoked at all deliberative gatherings, the real significance of which was *undying hostility to whites*.§ The Crows, or *Upsaraukas*, will not sit in council unless the pipe rests upon a dried bison "chip," and is lighted by means of a live coal of the same excrementitious material; but of what this is emblematic, remains a profound secret to this hour. Also an endeavor was made to engraft teetotalism upon their

‡ Mr. H. Youle Hinde likens the sound to "beautiful but melancholy reverberations of far-off church-bells." The same may be observed, and from like cause, among some of the limestone islands of western Lake Erie, but the tones are less sweet or distinct.

§ Mr. John Mason Browne, a gentleman from long residence among the tribes of the upper Missouri thoroughly familiar with Dacotah character, as long ago as 1865, said, "The prediction may be safely ventured that the Sioux will preserve this '*medicine*' until the nation shall have practically ceased to exist. To it may be traced the Indian war that devastated Minnesota in 1862; and there cannot, in the nature of things, and of the American Indian especially, be a peace kept in good faith until the Dacotah confederacy is in effect destroyed." For this Mr. Browne received the gratuitous scoffs and sneers of politicians and army officers, who are wont to be "wise before their time;" yet subsequent events have fully justified the truth thereof.

tribal *Shaman*, and with better success than would be imagined by those familiar with Indian character. Female chastity is, or was, the "*medicine*" of the Flatheads. Among the Mandans friendship for whites was long held a source of national and individual advantage. The lobo, or prairie-wolf, is the tutelary of the Blackfeet, one or two tribes of Plain Crees, and a branch of the Pend D'Oreilles, and its presence is encouraged about their camps and tepees, though the real secret of their regard is the incessant dolorous howls of the creature are *prima facie* evidence of security, for at the approach of man, the greatest of all foes, it sneaks silently away.*

Then there are personal *Shamans*, that may be either spiritual, totemic, or both, each individual, family, gens, or caste selecting as a familiar, some animal,—usually of the *carnivora*, as a tutelary.† With some races this is an occasion of some ceremony, and accompanied by conjuration and divination;‡ and the creature may not be killed for any ordinary purpose, nor its flesh eaten, or skin trafficked with. Many, again, make the selection untrammelled by any ceremony or rite other than fasting. There are also specific *Shamans*, independent of ruling spirits, for the purpose of recalling game, dispersing clouds, insuring rain, and to appease the manes of the departed, which last include chants, songs,§ and mortuary offerings, all of which are in some sense individual;|| and tutelars are oftentimes exchanged and discarded.

Shamanism also embodies a conception of the future state that, owing to its peculiar relations, cannot be passed by without remark. The "Land of Souls" comprehends all that is dear to the savage heart, untrammelled by exactions and vexations of mortality. The "Happy Hunting-Grounds" of poesy and fiction, with their pleasant prairies, crystal rivers, countless droves of horses and herds of fat game, perennial and luxuriant grasses and pleasant groves, where there is neither suffering nor pain, illness nor death, and general

exemption from all labor, save as may be entailed in preparing food: all are absolute realities to the primitive man, though wrapped in different guises according to the needs of tribes and races.¶ Many, both among the *Shams* and the laity, believe they have visited, or obtained more or less perfect glimpses of, this delightful land through the medium of visions and dreams, some even claiming to have conversed with the *Supreme Spirit*, who invariably appears in the guise of some familiar animal, usually one of the fur-bearing species. An aged Assinoboine was admitted by all who knew him, both of his own and neighboring tribes, to have been shown the "Land Beyond the River," conducted through it by the Great Spirit in person, and subsequently returned safely to his people. Another, an obscure individual of the Cat-Head tribe of the Dacotahs, was believed to have viewed the opening through which issue the herds of bison when called forth from the centre of the earth by *Wakan-Tanka* to feed his children.** And a Blackfoot claimed to have been transported by the "*Old Man*" to the park where the red men were taught the arts of life before they were relegated to their present abode, and whence they will return again if deserving. The Crees, a branch of the great Algonkin race, are famous for clairvoyance, or "second sight," and the facility with which they commune with the unknown; and one young brave, during a protracted illness accompanied by delirium, believed he had passed "over the river" into the "Land of Shades," and returned again expressly to depict its glories to his people. His account was so graphic as to be almost rhapsodical, and failed not to impress all who heard it with its truth.††

¶ Various ideas prevail as to the location of the "Delectable Land." The Lachoux place it above a walled canopy (the sky) encircling the world; the Thlinkets of Alaska, according to W. H. Dall, consider it a park hidden away about the head-waters of the Nasse River; the heaven of the Dacotahs and Chinooks is at the centre of the earth; that of the Dog-Ribs beyond the ice that encircles the Pole; and of the Crees and Otchipwes somewhere towards the tropics.

** It will be observed the Sioux long since anticipated "Prof." Syme's wonderful (!) discovery.

†† The following is a literal translation:

"I was ill, and fell asleep. I awoke on the bank of a deep river, whose waters were flowing swiftly and black from a great mist on the south, to a great mist on the north. Many were there before me, gazing at the flood, or the gloomy shore that lay wrapped in mist upon the farther side. Now and again the clouds would roll away, revealing the mouth of another great river

* See Appendix A.

† I once witnessed a meeting between two Indians of different tribes, an Ottawa and Otchipwe, neither of whom had ever seen the other. After shaking hands, they announced themselves *brothers*. Subsequently I discovered the relationship assumed arose from both being members of the same *gens*—"The Beaver"—in their respective tribes.

‡ See page 235 for ordeal of conjurers, which is almost identical with these rites.

§ See Appendix B.

|| See Appendix C.

There is a widely-prevailing belief, by no means confined to the ignorant and vulgar, that the savage is preternaturally wise in the secrets of Nature; that he is inherently endowed with faculties whereby a glance suffices to determine the value of any plant, growth, or mineral within the domain of his nomadism; and that his pathological information rises superior to anatomical or physiological considerations, transcending all that has been wrung from centuries of applied research on the part of civilization. Society is wont ever to turn a deaf ear to science and evidence, when the superstitions, that are in some measure inherent to every member of the human race, are called in question; and charlatanism receives its greatest impulse when found upon theologio-scholastic ground, since the clergy have not yet learned that adherence to primitive therapeutics is virtual abandonment and denial of the claims of Christianity. If such is an inherent gift of divinity, so also psychomancy must needs be the true philosophy of the soul! "Prayer-cure" and "mind-cure," far from being new,

pouring its angry waters into the one at my feet. To the south of this river all was bright, beautiful, and glorious; to the north, dark, gloomy, and forbidding. On the one hand was the happy hunting-grounds; on the other, the abode of evil.

"Time after time my companions sought to cross the swift waters to the happy hunting-grounds. Some arrived safely; others were carried to the north, and disappeared in the mists that shrouded that loathsome country.

"At last I ventured. Alas! the current was too swift. The recollection of my evil deeds overwhelmed me. I was unable to stem the swift waters; I was swept to the north shore of the opposite river.

"I scrambled up the bank. Many moons were passed by me hunting in that dreary land. Success rarely crowned my efforts; I was ever on the verge of starvation; in danger of foes, or wet, or cold,—always miserable.

"At length I came upon a river like the one I had crossed,—with mists, and the mouth of a great stream opposite. Breaking clouds soon revealed happy hunting-grounds on the one side, and a still more gloomy and terrible land upon the other. Many sat upon the bank gazing at the troubled flood; others attempting to cross. Some succeeded. But a few were swept away to the region of desolation. These were very bad people.

"I threw myself into the current. I knew I had done well in this dreary hunting-ground, and it gave me courage. I swam boldly and strong!

"Soon I landed upon the shore. My heart became light. My sorrows disappeared as I climbed the green slope. Before me I saw Indians numerous as grass-leaves; bison on the distant plains plenty as rain-drops in summer; a cloudless sky was above me; a warm, happy, scented breeze blew in my face. I threw myself upon the ground and slept. When I awoke I was here in my lodge on these plains again."

were both practised, undoubtedly, at the time when man chased the reindeer on the plains of middle Europe.

Somewhat extended knowledge of and experience in the phases of psychomancy as exhibited by the primitive races of America, permit me to speak definitely regarding their therapeutics. In no essentials do they differ from the practices of other races of low organism and development, whether found in Central and Northern Asia or in the jungles of Africa and Polynesia; and the variations noted are merely the sequels of psychological and tribal peculiarities. Consequently it may positively be asserted that the superstitions and bigotries of civilization pertaining thereto are without foundation in either analogy or fact, since they rest only upon the frail foundation of coincidence.*

The savage recognizes no influences, even in the simplest affairs of life, that are not derived from the supernatural and occult. He knows nothing of the relations existing between cause and effect. Physiological and pathological phenomena, and their sequences, are wholly beyond his mental grasp. Even his language is without an equivalent for remedies as *remedies*, or means of defining remedial results; and therapeutic manifestations are deemed but the conflicts of spirits, and the vanquishment of the weak. To him, disease is not morbid phenomena, but the individual or specific manifestation of some obnoxious demon who, through accident or design, has eluded the watchfulness of the tutelar, and established and fortified itself in the part affected. Under such circumstances, as may be imagined, most absurd ideas prevail, and measures adopted for relief are wholly irrelevant. Were I to repeat the barbarities practised to secure the most simple results, or the brutalities entailed by innocuous arrow-head punctures and superficial wounds, or the filthy and even obscene practices that obtain for the relief of everyday indispositions, they would scarce be credited.† Scarification, hacking of limbs (and

* Few have any conception of the prevalence of coincidences. In reality they are more numerous than facts, as any student in the pathological laboratory well knows, and are one of the chief evidences of occult relations existing between *mind* and *matter*.

† The following from the pen of simple and honest Samuel Hearne ("Hearne's Journey"), though the *half* is not told, is sufficiently illustrative:

"The natives themselves (Dog Ribs) never make use of any medicines. . . . Nature alone works the cure." (P. 338.) "They use no medicine either for internal or external complaints, but perform all cures by means of

even the whole body), with flints and knives; the actual cautery,—hot irons, stones, or ignited touch-wood; and the hot vapor-bath, which has less a hygienic and therapeutic significance than as an act of worship; such are the *simplest* of surgical resorts. Think, for instance, upon the “inherent native skill” (as often quoted) that caused the soft parts of the throat, including fauces and soft palate, to be forcibly wrenched out by a pair of bullet-moulds in the hands of an “Indian doctor,” and all to relieve a tickling cough arising from relaxation of the muscular tissues of the pharynx and an elongate uvula!* And this was not provoked by any appreciation of the real difficulty, but was calculated to remove, and render the parts uninhabitable to the demon that had taken up its abode therein. It is perhaps unnecessary to add the operation was in every way a success, for it not only secured the dislodgment of the spirit of the malady, but that of the individual likewise; and the death of the unfortunate was deemed the sequel of extreme malignancy on the part of the former.

The so-called “Indian doctor,” who penetrates our cities and towns, or perambulates the villages and rural districts, preying upon the superstitions of civilization, if really a red man, is never a true *Sham* or “*Medicine-man*,”

charms. In ordinary cases, sucking the part affected, blowing and singing to it, hawking and spitting, and at the same time uttering a heap of unintelligible jargon, compose the whole cure. For some inward complaints, such as griping in the intestines, difficulty of making water, etc., it is very common to see these jugglers blowing into the *anus* or into the *parts adjacent* till their eyes are almost starting out of their heads; and this operation is performed indifferently on all without regard to age or sex. The accumulation of so large a quantity of wind is at times apt to occasion some extraordinary emotions, which are not so easily suppressed by the sick person; and as there is no vent for it but by the channel through which it was conveyed thither, it sometimes occasions an odd scene between the doctor and patient, which I once wantonly called a *bombardment*, but for which I was exceedingly sorry, as it highly offended several of the Indians, particularly the juggler and the sick person, both of whom were men I much esteemed; and, except in that moment of levity, it had ever been no less my inclination than my interest to show them every respect that my situation would admit. I have often admired the great pains these jugglers take to deceive their credulous countrymen, while at the same time they are indefatigably industrious and persevering in their efforts to relieve them. Being naturally not very delicate, they frequently continue their windy process so long that I have more than once seen the attendant quit his patient with his face and breast in a very disagreeable condition! (P. 190.)

* A fact.

but some knave, who has profited by association with the whites, taking a leaf from the book of the pale-faced charlatan. By assumed stoicism, dignity, imperturbability, and brevity of speech, the reasons for which last are obvious, along with glances replete with concentrated wisdom, he has little difficulty in securing dupes and following. He is nearly always a drunken scoundrel and *ex-protégé* of some missionary society, one who, among his own people, receives the scorn and contempt due a renegade, not one of whom would accept the *dogwood* bitters, *tag-alder* teas, *prickly-ash* stews, *crowberry-bark* decoctions, *sumac* infusions, and *mandrake* physic, which he so lavishly distributes in all their crude nauseousness to his white admirers.

Again, the position and ease attendant upon a reputation for *Shaman* is wont to develop pretenders and charlatans in the lower as well as upper ranks of society; but such are in no sense “*Medicine-men*,” nor do they often secure permanent or respectable following. Many a warrior, revered and respected in council and tribal deliberations, has become the butt and jeer of an entire community as a sequel to pretensions to “*medicine*.” On the other hand, a well-known poltroon, inferior in intellect perhaps, through innate or acquired faculties (from *epilepsia*, oftentimes) that fit him for the position, obtains admittance to the ranks of the fraternity of *Shams*, thereby becoming an oracle whose behests may not be assailed or controverted, even by chiefs; and his influence extends not only to his own immediate clan, but to neighboring tribes,†

† Of the influence one such personage may exert, I cite an instance from personal knowledge. A band of Swampies, a branch of the Cree nation, were in the habit, annually with each autumn, of resorting to “Pike’s Head,” near the mouth of Jack Fish River, on Lake Winnipeg, in order to subsist upon *Ah-tik-a-meg* (white-fish), which could here be had in abundance when other foods were unobtainable. In the midst of one of these migrations (in 1860, I think), they were overtaken by a runner bearing a message from the “Beaver,”—a noted “*Medicine-man*” of the Upper Saskatchewan district,—forbidding nearer approach to the lake, or the taking of fish during that winter, on pain of his displeasure and the evil he would invoke. Though the threat was in no way specific, and merely the sequel to petty enmity and spite, its very ambiguity made it the more alarming. The poor Swampies made haste to break camp and return to their summer hunting-ground, though knowing such would entail the perils of starvation. The result was great suffering and privation: many died from want before their condition became known to the Hudson’s Bay Company authorities, and succor was had from this source. (See account of the “Black Snake” in Appendix.)

and perhaps even to the camps of hereditary enemies.

The true *Sham*, or "*Medicine-man*," is little understood by civilization, since he exhibits a phase of savage life that is rarely permitted to come under casual observation. Very far from being a mere knavish varlet, conspicuous for unblushing impudence and petty chicanery as commonly depicted, he is instead a staid, earnest, shrewd, far-seeing man, more than ordinarily endowed, with perceptive faculties sharpened by observation and training, and accustomed to receive impressions and draw conclusions from matters so trivial as to elude general comprehension.* As a rule, he is honest,—as the world goes,—and a firm believer in the truthfulness and advantages of his calling. The deceptions he practises are unavoidable, and less with a view to delude humanity, than to cajole and beguile the unseen and unknown. He is a "mind-reader," psychologist, mesmerist, and clairvoyant in one,—of no mean ability; an endowment that, though sometimes inherent, is oftener inculcated and developed through *ecstasia*.†

* Herein lies the secret of deductions that, made without apparent basis, are so accurately drawn as to fairly appear marvellous; but the credit thereof is always given to the familiars who, he believes, constantly attend him. Knowledge, however gained, even if through personal study and application, is necessarily a spiritual gift. If it were not, he argues, why do some acquire easily, some not at all? Consequently, whatever his acts or professions, the *Sham* is always consistent.

† The practice of *ecstasia* is universal in all lower stages of culture as the outgrowth of anxiety to peer into the future. It is what procures camp-meeting "*power*," and "*glory*," that attracts the negro to his houses of worship; sustains the Dacotah under the tortures of the "*Sun Dance*," and promote the labors of "*evangelists*," beside being a derivative of many forms of *mania*, *dementia*, and *hysteria*. To one of its many forms (more particularly *epilepsia*) the religions of the world, past and present, owe their rise,—Judaism, Egyptian and Greek mythology, Lamaism, Buddhism, Christianity, Mohammedanism, and also the sects that have sprung from the Reformation, down to Shakerism. *Theosophy*, which boasts it "will yet sweep the world," far from being advancement, is retrogression, and promises nothing that was not probably known to the earliest nomad, or that is not patent to modern primitive barbarism: it is but primitive psychomancy in a new dress. The savage recognizes that clairvoyant and psychic conditions may be inculcated and developed spontaneously (through various mental and physical processes, by any act or affection that procures anæmic disarrangement or disorganization of the great nerve-centres), hence for this purpose he resorts to fasting, long vigils, and self-inflicted physical tortures. We frequently discover these peculiarities in the midst of civilized society. Two patients of my own exhibited such in marked degree. One, a finely-educated lady, of excellent mental balance and culture,

To the prejudiced vision of critical civilization he may appear an object of contempt and ridicule, owing to incongruities of behavior and costume, yet it must be remembered that frippery is a concomitant of barbaric splendor, pomposity of savage dignity, and asceticism and indifference but synonyms of pride and austerity. The very state of society by which he is surrounded entails all these as necessities, and if he is curt and rude, it is because his position and prosperity is founded upon the superstitions of his calling and following.

The dignity and power that accrue to the profession of psychomancy, by reason of autocratic relations no way limited by tribal considerations, render it the noblest aspiration of the young savage. Even pale-faces have sought to be enrolled within the mystic brotherhood (for such it is) as a means of extending their influence, though few, so far as I am aware, have ever been admitted to the higher and inner mysteries without first being adopted into the tribe and undergoing the prescribed ordeals.‡ Women, as a rule, are excluded, though now and again, by virtue of some extraordinary gift, one sometimes obtains *quasi* recognition. I never knew but one "*medicine squaw*," she of the Salteaux Otchipwes, supposed to have accomplished a quarter more than a century of life,—a claim fully justified by her appearance. Toothless, wrinkled, every way hideous and repulsive, cordially hated and feared, the malignancy of her disposition was such that even when *articulo mortis* she cursed and menaced with a long stick kept by her side for the purpose, the children and dogs that ventured near her *lair*. For many years all but bedridden, she passed her time in solitude and neglect in a rude wigwam on the outskirts of the village, her only covering and garment a filthy caribou-skin robe, her support, merely what she could gather or wring from the tribe by threats. She also boasted numerous acts of cannibalism, by which it was popularly held she had obtained a lease of life that could be terminated only at her own option. Her death was the sequel of a bullet-wound inflicted by a French half-breed she had threatened to

who sought to mitigate the pangs of a great bereavement by excessive devotion to religion; the other, a gentleman of superior brain-development and physique, who was given to occasional deep and prolonged alcoholic and venereal excesses that were invariably followed by psychic and mesmeric phenomena, including voluntary clairvoyance.

‡ See Appendix D.

"bewitch," whereby the latter gained a reputation for bravery that, however, would have stood him in little stead but for the interposition of a prominent *Sham*, who averred the crime would prove a blessing to the tribe; and by order of the latter the body was cremated in the flames of her own dwelling, that her spirit might not secure lodgment in the neighborhood.

Except in special instances, recognition by the brotherhood of *Shams* requires a more or less extended novitiate; but even this favor is not obtained without difficulty, as there is manifest disinclination on the part of the fraternity to increase their number, and thereby divide power and profit. The friends of the aspirant are always ready to promote his interests, even to the sacrifice of personal wealth, since the position is one of honor and emolument, from which they expect to derive due advantage, and consequently heavy bribes are not infrequently tendered, and as often, perhaps, rejected.

Consent obtained, the candidate enters upon his duties by becoming an assistant, or *acolyte*, to one or more of the brotherhood, by whom he is carefully studied to discover his abilities. The apprenticeship is arduous, beset throughout by trials and stumbling-blocks calculated to tax to the utmost the patience, faith, endurance, and fortitude of the individual, and betray his inner consciousness and latent foibles. When sufficiently advanced, he is commanded to proceed, surreptitiously, to some one of the mysterious solitudes accredited with being the haunt of the particular *manit* whose favor is sought, there to offer sacrifice, beside which he must remain constantly, without shelter, unprotected from the elements, fasting,* and alone until the spirit vouchsafes its pleasure by revealing itself personally in its animal form,† or in dream or vision. Here some fail, for the ordeal is no trifling one. If overcome by

fears engendered through disordered imagination, or by suffering, hunger, and exposure, or the spirit declines to manifest itself in the accustomed manner, no second essay is ever permitted. Individuals have been known to perish in the midst of these vigils (a most honorable death) rather than face the disgrace that inevitably attends such misfortune; and deception is unknown, since it is believed it must react with fatal effect upon its author. Commonly, however, the desired result is attained with little difficulty, since the situation and surroundings, and the bodily and mental torture induced, serve to disorder the nerve-centres whereby *ecstasia* is procured.‡

Strictly speaking, the novitiate is now ended, and the individual assumes rank as a conjuror, though first he must seek a specimen of the creature of his vision which shall fulfil certain conditions of age, sex, and de-

‡ It has been supposed that narcotics bear a chief part in the production of *ecstasia*, but this is entirely gratuitous. Powell ("Bureau of Ethnology," 1879-80, p. 36) purloins the idea from George Hartwig, and adds, "Civilized man has thus inherited an appetite for narcotics to which the enormous propensity to drunkenness existing in all nations bears witness. When the great actor in his personification of Rip Van Winkle holds his goblet aloft and says, 'Here's to your health and to your family's, and may they live long and prosper,' he connects the act of drinking with a prayer, and unconsciously demonstrates the origin of stimulants. It may be that when the jolly companion has become a loathsome sot, and his mind is ablaze with the fire of drink, and he sees uncouth beasts in horrid presence, that inherited memories haunt him with visions of the beast gods worshipped by his ancestors at the very time when the appetite for stimulants was created."

And *this* is science! In his anxiety to establish a *point*, the author drags the prayer or invocation that attended the libations of ancient civilizations, into the mythology of the primitive man past and present, and establishes it as a sequel to *ecstasia*. Apparently he is not aware that *cerebral hyperaesthesia* is a concomitant of brain *anemia*, rather *hyperamia*, and that the latter is usually fatal to *ecstasia*; that *stimulation* is very far from being *narcotism*; and that physiologists will be surprised to learn that *mania a potu* is a "*mind ablaze with the fire of drink*!" While narcotics may procure transitory delirium or mania, neither constitute *ecstasia*, even though ecstatic. No primitive race known to civilization ever resorts to any methods other than fasting, and physical and mental mortification, to secure *ecstasia*; yet many are familiar with both stimulants and narcotics, and employ them for purposes of intoxication. I am not prepared to deny the human family has the love of stimulants as a heritage, however, for the evidence in this respect is fairly overwhelming when we consider that *eight hundred millions* are addicted to tobacco, *half that number* to opium, *five-eighths* as many to tea and alcohol, and *sixty millions* to coffee, and yet the devotees of *coca*, *bang*, *hashish*, *betel*, "*muc-a-more*," and *awa* are not considered. (*Vide Jour. of Inebriety*, for 1877.)

* W. H. Dall ("Alaska and its Resources," p. 425) says that among the Tlinkets it is permissible for the aspirant to sustain life by means of the roots of *Panax horridum*,—one of the gensing family; but this is not true of the red races generally.

† Certain creatures represent the multiple essences of a very powerful spirit,—such as beaver, bear, marten, mink, weasel, fisher, musquash, otter, wolverine, fox, black- and rattlesnake, sturgeon, dog-fish (*Amia ocellicauda*), lake sheephead (*Haplodonitius grunniens*), etc. The hare also is a powerful representative, and figures prominently in the mythologies of all North American nomads, and likewise appears in the superstitions of Southern and West India negroes, who doubtless derived them from the coasts of Africa. (See *Pah-ah-kuk*, p. 230.)

velopment, be killed in a certain way, and its skin dressed in a peculiar manner. Subsequently, when ornamented with savage gauds, it becomes the "*spirit*," or "*medicine-bag*"* of the conjuror, that thereafter is constantly worn suspended from the neck. Also a portion of the animal's flesh is devoured raw, in order that the spirit thereof may incorporate itself with that of the *Sham*, when it becomes the inspiration of all his acts and intercessor at the courts of the supernatural.

Subsequently progressively higher degrees in psychomancy may be had by those who evince capability therefor, which are instituted at special or stated gatherings of the fraternity, and within a sacred "*medicine-lodge*;" and these mysteries have never been penetrated by any unauthorized person, and are always savagely revolting. Not only are the customary drummings and rattlings to be heard, accompanied by howls and dancing, but also the shrieks and moans of creatures tortured and vivisected for purposes of divination: there is a great similarity between some of these practices and those of howling and dancing dervishes of the Orient. The whole invariably winds up with a feast, to which the laity are admitted, when feats of

* The "*medicine-bag*" is the repository of amulets by the possession of which the immediate favor of *their* spirits are secured; and these are by no means constant, since they are changed as often as the familiars prove capricious or refractory. No two bags ever exhibit the same array of contents, though certain articles, such as the rattles and fangs of serpents, claws of the beaver, teeth of the bear or raccoon, and bunches of hare's fur, are usually common to all. One recently in my possession contained the following: bit of skin from hough of moose; tip of caribou ear; ditto of lynx,—the hairy tuft; two incisor teeth of some rodent,—probably flying or red squirrel; four beaver teeth; fangs and tail-tip of rattlesnake; two fossil pteropods,—supposed to become moths after twilight; fur from tip of tail of a mink, tied with horse-hair; portion of dried entrails of some fish, species unknown; two ear-bones of the Great Lake sheephead (*Haplodonitius grunniens*),—"great medicine," and to which whites attach the superstition of "good luck" insured by their possession; portion of the cartilaginous vertebræ of lake sturgeon; claw of wolverine,—"very powerful medicine;" a nugget of native copper; ditto of silver in copper matrix; copper arrow-head,—"mound-builder's;" rounded and polished piece of magnetic iron,—"grape ore;" crooked nail; button with monogram V.R.; claw of cray-fish; vertebræ of lake lizard,—*menobranchus*; bit of feldspar; ditto amethystine quartz; three splinters of seyenite; two packets containing powder, one white, one yellow, carefully wrapped in birch bark and tied with sinew,—one responds to arsenic tests, the other appears to contain sulphate of cinchonidia along with an alkali, neither a savage product; two water-worn splinters of juniper; and lastly, three beautiful *aspidolites* or *chlorophyllites*,—"big medicine."

gormandizing are in vogue that would fairly astonish the digestion of an anaconda. One of the mysteries, more especially obtaining among the Crees, Otchipwes, and Chipewyans, is sometimes practised in public on the eve of the annual "*Goose Feast*," that requires the candidate to devour a whole *live* dog; and a more hideous or fiendish procedure, as viewed by the firelight, attended by the shrieks of the victim and howls of the multitude, cannot be imagined.

APPENDIX.

A.

The great *Shaman* of the Chepewyans is the "Boy in the Moon." The tradition is that an old woman found a boy in the forest, brought him to camp, and cared for him. The lad made for himself a pair of snow-shoes of such preposterous dimensions as to excite the mirth and ridicule of all who saw them; the tallest man in the tribe could not have used them. He could give no account of himself, or where he came from, and altogether he was regarded as mysterious and uncanny, and consequently avoided.

Whenever the tribe suffered for food, and the best hunters could kill no game, some one would be sure to discover a strange track, with steps a prodigious distance apart, that invariably led to a newly-killed deer. There the steps ended, and no further trace of the unknown hunter could be found. Finally suspicion fastened upon the strange boy and his enormous snow-shoes, which corresponded to the track; and when placed under surveillance it was found he was in the habit of stealing secretly from the camp, returning again in some mysterious and incomprehensible manner, leaving no trace, and defying the utmost watchfulness. On such occasions also a newly-killed deer was always discovered.

Though identified as their unknown benefactor, he still was neglected, poor, and ragged. But the following winter, at a time when the hunters had met with great success and killed a number of caribou, he begged for a bit of fat, which was unkindly and arrogantly refused. That night he disappeared, and no vestiges, save his ragged clothing, thrown upon a heap of refuse and offal, could be found.

A moon later he suddenly reappeared, but well dressed and grown to man's stature. He now informed the people his disappearance was caused by his return to his home in the moon, whence he should shortly return, and that he would continue to afford them countenance and protection as long as they were deserving. When in distress, they might appeal to him, when he would be the judge of their needs; but, as punishment for having refused him a piece of fat when he sought it, all deer should thenceforth be lean in winter and fat only in summer, which is true of the caribou to this day. Since then he has continued to reside in the moon, where his face may sometimes be seen; and the hunters are his especial care, and with an offering of fat rarely fail to secure his favor.

B.

The following is the song of a Blackfoot squaw as sung to appease the manes of her son who was killed by the Crows or Upsaraukas:

"Many scalps will be taken for your death:
The Upsaraukas will lose many horses:

Their squaws will weep for their braves:
They will curse the spirit of Isthumaka!
O my son! I will come to you,
And make moccasins for the war-path,
As I did when you struck the lodge
Of the 'horse-guard' with the tomahawk.
Farewell, my son! I will see you
Beyond the 'Broad River.'

"O my son, farewell!
You have gone beyond the 'Great River';
Your spirit is far beyond the Sand Buttes;
I shall not see you for an hundred winters;
But you will scalp the foe in the green prairie
Beyond the 'Great River.'
When the braves of the Blackfeet meet;
When they smoke the spirit-pipe and dance the war-dance;
They will ask, 'Where is Isthumaka?
Where is the bravest of the Mannikappi?
He fell on the war-path!'"

Said the gentleman from whom the foregoing was obtained, "Sung in a plaintive minor with wild irregular rhythm, the dirge was far more impressive than mere words can convey."

C.

The majority of whites brought in continuous and intimate relations with savages and nomadic life, notwithstanding education, prior teachings, and iron-clad creeds, are wont to imbibe more or less of the superstitions of *shamanism*, and oftentimes surpass the nomads themselves. This may appear strange at first thought, yet we find the same occurring in the midst of the most advanced civilizations under the guise of Spiritism and Theosophism, "Vitipathism," etc. The "Free Trapper," so graphically described by Washington Irving, though now all but extinct, was wont to ostentatiously out-medicine (so to speak) even the red man. His horse and its caparisoning and ornaments were each and all "medicine," also his apparel from cap to moccasins, and the sash, and the knife, axe, and pipe suspended therein. By means of "medicine-powder," a "medicine-gun" was made to propel "medicine-bullets." And from his neck depended a "medicine-bag," with *medicine* for almost every imaginable phase of life and existence, including accidents by flood and field, to secure success in trapping, to procure rain or sunshine, etc.

D.

Sometimes a very trifling circumstance will unwittingly, perhaps, elevate a white man to rank as a *Sham*, and if possessed of tact and ability, he may be acknowledged by the red "brethren of the profession." A foolish and petulant remark gave one Meldram, an employé of the American Fur Company at Fort Benton, the favorite *medicine-man* of the Crows, a position he accepted, and held for years to their satisfaction and his own profit, his amulets being a silver watch of the "bull's-eye" pattern and an almanac, which latter, by reason of the cut of a human form partially eviscerated and surrounded by the signs of the zodiac that appeared upon the title-page, was deemed "most powerful *medicine*." During the construction of a heavy press for baling furs he was constantly pestered by curious savages. Finally a number of Crows began making inquiries at a moment when he was busy getting a heavy beam in place, and he curtly replied it was a *medicine* that would cause snow to fall to a depth marked by the knotted cord attached to the lever. The fame of the "snow medicine" rapidly spread. Hundreds came to see it from a distance, and all looked forward to winter with no little anxiety. Strange to say, snow *did* fall to the depth indicated,

about a yard, and though it touched the knot of the rope, never rose any higher.

By no less a bit of foolishness I found myself famous. Two of us were staying with an illicit vendor of alcohol in the Indian country, our host being a strong partisan of A. J. Davis and Richard D. Owen. For want of better amusement, we were wont to chaff him upon his belief, and one evening sat down to a small pine table and procured all the phenomena of "spirit-rapping," "table-tapping," etc., somewhat to our own astonishment, for neither had ever essayed the feat before, and greatly to the delight of our landlord, who vowed we had heretofore "been testing" him. The last to leave the table, as I rose that useful article of furniture insisted upon following me some distance across the room. A dozen Otchipwes had witnessed the performance, and now they hurried out of the house, shaking their garments, and exclaiming, "*Spirits! spirits!*" The day following I met one of the dusky audience, who requested a charm to drive away rheumatism, to which I responded by handing him a *cachou aromatique*. An hour later another proffered the same request, seizing my hand, and adding, "*Ah, Do-ah-tor, I 'fraid of yoh: yoh great med's'n,—mak gôs* (ghosts)!" A few years later I found both had been permanently relieved, and that the pellets, minus their silver coating, were still in existence and accredited with many wonderful cures!

PORT HURON, MICHIGAN.

(To be continued.)

THE ANTIPYRETIC ACTION OF ANTIFEBRIN.

BY DR. E. W. EVANS, EASTON, PENNA.

(From private laboratory of Dr. Ott.)

PART I.—ON THE NORMAL ANIMAL.

THE many favorable reports on the clinical action of the new antipyretic acetanilide, perhaps more familiar under the name of antifebrin, have led me to make a few experiments with it in order to ascertain as far as possible its mode of action, more particularly in temperature reduction.

Acetanilide is not by any means a new substance, having been known to chemists for a long time; but it is only recently that its physiological property as an antipyretic was discovered.

It is a neutral body, not acted upon by hydrochloric or sulphuric acids, and not affected by alkalis, except when greatly concentrated. Occurs as a fine white crystalline odorless powder, imparting a slight burning sensation to the tongue. Dissolves in ether, alcohol, benzene, benzol, and essential oils, but is insoluble in cold and only sparingly soluble in warm water, from which it crystallizes again at 108° F.

Its chemical constitution is $\text{NHC}_6\text{H}_4\text{C}_2\text{H}_5\text{O}$, and is obtained in an impure state by the

action of aniline upon glacial acetic acid in the presence of heat; and from this the pure article may be secured by crystallization from benzol or boiling water.

Hence the drug belongs chemically to the acetanilides or phenyllacetamides, differing greatly in this respect from the other antipyretics, which belong either to the phenols (carbolic acid, hydrochinon, resorcin, salicylic acid) or to the chinoline order (antipyrin, chinolin, kairin, quinine, thallin).

Considerable difficulty was at first encountered in the administration of the drug in the solution used (1 gramme to 50 c.c. warm water) owing to its high point of crystallization; this, however, was overcome by frequent applications of heat to the solution, together with further dilution, one-half usually being sufficient to maintain the drug in solution at a temperature not too high for injection.

Preliminary to the experiments on heat production and heat dissipation I have made one or two in order to note its general action on the heart and respiration.

Experiment 1.—Rabbit; weight, 2.72 pounds.

Time. P.M.	Temp.	Remarks.
2.25	103.4°	
2.37	.....	Injected .12 gramme antifebrin hypodermically.
2.47	102.4°	
2.54	.....	.06 gramme hypodermically.
3.10	102.2°	
3.20	.....	.06 gramme hypodermically.
3.38	.....	.06 " "
3.45	101.6°	
3.53	.....	Slight drowsiness.
4.06	101.6°	
4.35	.....	.15 gramme injected into jugular.
4.41	.....	Perfectly relaxed; reflexes still manifest.
4.45	97.3°	
4.50	.....	Pulse 188; respiration 64.
5.05	95.8°	Pulse 172; respiration 64; all reflexes abolished.
5.30	.....	Pulse 144; respiration 56; .75 gramme in jugular.
5.35	.....	Pulse 132; respiration 16; gasping and irregular.
5.45	94.4°	Respiration more regular.
6.00	.....	.5 gramme injected into jugular.
6.01	.....	Respiration almost ceased; heart still regular but weak.
6.03	.....	Rabbit dead; heart immediately exposed and found not beating.
6.10	.....	Examination of urine revealed no sugar, but the manifest presence of albumen.

It will be seen that in this experiment 1.7 grammes of antifebrin were exhibited to an animal weighing only 2.72 pounds, within a period of three and one-half hours, before death ensued. It would seem at least that

the drug is not a very dangerous one in its effect upon either the heart or respiration, especially since the doses used were extremely large in comparison with those found necessary to obtain the desired effect in its clinical application,—11 grains producing a fall of 2.4° C. in three hours in a man aged nineteen years suffering with typhoid fever. About four times that amount of antipyrin being required to produce an equal reduction.*

In the experiment given above .3 gramme caused a fall of 1.8° F. in one hour and twenty minutes without having any perceptible influence, either general or upon the heart or respiration.

Experiment 2.—Rabbit; weight, 2.5 pounds.

Time. P.M.	Temp.	Remarks.
2.30	100°	The rabbit's temperature was 102° previous to the introduction of the canula into the jugular.
2.35	.....	.12 gramme antifebrin injected.
2.48	99.6°	
3.00	.....	.12 gramme into jugular.
3.05	.....	Partial relaxation; staggering.
3.13	99.8°	
3.45	100.6°	
3.50	.....	.12 gramme injected into jugular.
4.30	101.3°	Rabbit lively as ever and returned to pen.

In the second experiment the same amount of antifebrin that had caused a fall of 1.8° in the previous one produced in the same time a fall of only .4°. The general effect, however (to note which was the object of these experiments), was almost equally unnoticeable.

The results here obtained, at least in the first experiment, are at slight variance with those of Cahn and Hepp, as regards temperature reduction in the normal animal.

Again, in the calorimeter experiments I never failed to get some reduction (from .4° to 1.6°) when small doses were employed.

It is quite possible that this disagreement may be entirely due to a difference in the amount of drug exhibited, since large doses elevate temperature. However that may be, it is evident that the toxic effects of antifebrin are not manifested by such doses as are required to secure the necessary reduction in fever.

I next proceeded to study by a few calorimetric experiments the effect upon heat production and heat dissipation.

The calorimeter used is known as *D'Arsonval's*. The receiver is formed by the inner one

* "Clinical Experiments of Cahn and Hepp," *Centralblatt für Klinische Medizin*, August 14, 1886.

of two concentrically arranged copper cylinders, the outer one being about one-third greater in diameter, thus creating a second annular chamber between the two, which is filled with water for the purpose of maintaining a uniform level of temperature to the calorimeter. Through the inner chamber the air is drawn over the animal, and pumped out through the large metre of 'Voit's respiration apparatus by a water-wheel attachment. The D'Arsonval gas-regulator I will not describe, since it never worked satisfactorily and was not used in any of my experiments. The thermometric observations were made on Geissler's thermometers, which were previously carefully tested at the Yale Observatory and the necessary corrections made.

I will exemplify these experiments by rendering the first one in detail, and in the succeeding ones simply make use of the results obtained.

The method of calculation employed in these experiments is practically the same as that of Dr. H. C. Wood.

Experiment 3.—Rabbit; weight, 3.26 pounds.

Time.	Air temp.	Exit temp.	Cal. temp.	R. temp.	Metre.
1.24	74.35°	68.95°	69.25°	104.4°	868.204
1.39	75.05°	71.65°	69.45°	.....	.....
1.54	75.25°	72.01°	69.65°	.....	.....
2.09	75.45°	72.19°	69.85°	.....	.....
2.24	75.45°	72.01°	70.05°	104.6°	869.100
	75.11°	71.36°	69.65°	.2° gain.	896
	71.36°		.80° gain.		
			.30° gain corrected.*		

3.75° loss.
2.40 .045 gramme antifebrin injected hypodermically.

Time.	Air temp.	Exit temp.	Cal. temp.	R. temp.	Metre.
3.06	75.35°	70.93°	70.35°	105.0°	869.100
3.21	75.05°	73.45°	70.75°	.....	.....
3.36	74.95°	73.81°	70.95°	.....	.....
3.51	74.75°	73.09°	71.15°	.....	.....
4.06	74.55°	73.09°	71.35°	104.4°	870.629
	74.93°	72.87°	70.91°	.60° loss.	1529
	72.87°		1.00° gain.		
			.64° gain corrected.		

2.06° loss.

* By making a series of experiments in which there was no animal placed in the chamber of the calorimeter, and no air pumped through, it was observed that the calorimeter temperature in one hour rose .09° for every degree that the air temperature stood above that of the calorimeter; discovering the fact that the calorimeter rise was due to three factors instead of two, viz., heat given to the calorimeter by the animal, heat given off by the air passing through (always at a temperature about 3° higher than that of the calorimeter), together with a relatively large amount of heat taken from the surrounding air. This last factor was always overcome by making this .09 correction on the calorimeter gain previous to the calculation of heat units given to the calorimeter.

Before injection :

$$\begin{aligned}
 V' &= 896 \text{ litres of air pumped through the large metre.} \\
 t' &= 71.36^\circ - 32^\circ = 39.36^\circ, \text{ number of degrees the air is heated above } 32^\circ. \\
 V + (V \times 39.36 \times .000035 \text{ coefficient of expansion}) &= 896. \\
 V + .0800976 V &= 896 \\
 1.0800976 V &= 896 \\
 V &= 896 \\
 \frac{1.0800976}{1.0800976} &= 829.6266 \\
 W &= V \times .002851, \text{ weight of 1 litre of air at } 32^\circ \text{ F.} = 2.3552 \text{ pounds.} \\
 Q &= 2.3552 \times 3.75 \times .2374 = 2.0867, \text{ heat units taken from the air.} \\
 Q &= W \times t' \times \text{Sph.} \\
 Q &= 37.5 \times 1 \times 1.002 = 37.575 \\
 Q &= W \times t' \times \text{Sph.} \\
 Q &= 43.5 \times 1 \times .095 = 4.1325 \\
 41.7075 & \text{ Heat units required to raise the calorimeter } 1^\circ. \\
 41.7075 \times .3 &= 12.51225 \text{ Heat units given to the calorimeter.} \\
 2.08670 & \text{ Heat units taken from the air.} \\
 10.42555 & \text{ Hourly heat dissipation.} \\
 \text{Heat added to reserve} & .54110 = (3.26 \times .2 \times .83) \\
 10.96665 & \text{ Hourly heat production.}
 \end{aligned}$$

After injection :

$$\begin{aligned}
 V' &= 1529 \text{ litres of air pumped through the large metre.} \\
 t' &= 72.87^\circ - 32^\circ = 40.87^\circ, \text{ number of degrees the air is heated above } 32^\circ. \\
 V + (V \times 40.87 \times .000035) &= 1529 \\
 V + .08317045 V &= 1529 \\
 1.08317045 V &= 1529 \\
 V &= 1529 \\
 \frac{1.08317}{1.08317} &= 1411.819 \\
 W &= V \times .002851, \text{ weight of one litre of air at } 32^\circ \text{ F.} = 4.025. \\
 Q &= 4.025 \times 2.06 \times .2374 = 1.9684 \text{ Heat units taken from the air.} \\
 41.7075 \times .64 &= 26.6928 \text{ Heat units given to the cal.} \\
 1.9684 & \text{ Heat units taken from the air.} \\
 24.7244 & \text{ Hourly heat dissipation.} \\
 (3.26 \times .6 \times .83) &= 1.6234 \text{ Heat taken from reserve.} \\
 23.1010 & \text{ Hourly heat production.}
 \end{aligned}$$

Time.	Rec. temp.	Cal. temp.
P.M.		
1.24	104.4°	69.25°
2.24	104.6°	69.55°
		.30°
2.40	.045 gramme of antifebrin injected hypodermically.	
Time.	Rec. temp.	Cal. temp.
P.M.		
3.06	105.0°	70.35°
4.06	104.4°	70.99°
		.64°

RESULTS.

Hourly heat dissipation.....	10.42
Hourly heat production.....	10.96
Hourly heat dissipation.....	24.72
Hourly heat production.....	23.10

SUMMARY.

Hourly heat dissipation before antifebrin.....	10.42
Hourly heat dissipation after antifebrin.....	24.72
Gain in heat dissipation.....	14.30
Hourly heat production before antifebrin.....	10.96
Hourly heat production after antifebrin.....	23.10
Gain in heat production.....	12.14

Experiment 4.—Rabbit; weight, 2.28 pounds.

Time. P.M.	Rec. temp.	Cal. temp.
1.40	102.4°	72.65°
2.40	101.0°	73.06°

.41°

2.41 .015 gramme of antifebrin injected hypodermically.

Time. P.M.	Rec. temp.	Cal. temp.
3.30	101.4°	73.45°
4.30	101.0°	73.76°

.31°

RESULTS.

Hourly heat dissipation.....	16.20
Hourly heat production.....	13.22
Hourly heat dissipation.....	12.76
Hourly heat production.....	11.91

SUMMARY.

Hourly heat dissipation before antifebrin.....	16.20
Hourly heat dissipation after antifebrin.....	12.76

Loss in heat dissipation..... 3.44

Hourly heat production before antifebrin..... 13.22

Hourly heat production after antifebrin..... 11.91

Loss in heat production..... 1.31

Experiment 5.—Rabbit; weight, 2.29 pounds.

Time. P.M.	Rec. temp.	Cal. temp.
2.24	103.8°	68.75°
3.24	103.8°	69.05°

.30°

3.46 .015 gramme antifebrin injected hypodermically.

Time. P.M.	Rec. temp.	Cal. temp.
4.16	104.4°	69.95°
5.16	103.3°	70.31°

.36°

RESULTS.

Hourly heat dissipation.....	10.96
Hourly heat production.....	10.96
Hourly heat dissipation.....	12.54
Hourly heat production.....	10.19

SUMMARY.

Hourly heat dissipation before antifebrin.....	10.96
Hourly heat dissipation after antifebrin.....	12.54

Gain in heat dissipation..... 1.58

Hourly heat production before antifebrin..... 10.96

Hourly heat production after antifebrin..... 10.19

Loss in heat production..... .77

Experiment 6.—Rabbit; weight, 2.74 pounds.

Time. P.M.	Rec. temp.	Cal. temp.
1.27	101°	68.85°
2.27	101°	69.24°

.39°

2.59 .015 gramme injected hypodermically.

Time. P.M.	Rec. temp.	Cal. temp.
3.37	101.6°	69.35°
4.37	100.0°	69.75°

.40°

RESULTS.

Hourly heat dissipation.....	15.58
Hourly heat production.....	15.58
Hourly heat dissipation.....	16.68
Hourly heat production.....	13.04

SUMMARY.

Hourly heat dissipation before antifebrin.....	15.58
Hourly heat dissipation after antifebrin.....	16.68

Gain in heat dissipation..... 1.10

Hourly heat production before antifebrin..... 15.58

Hourly heat production after antifebrin..... 13.04

Loss in heat production..... 2.54

Experiment 7.—Rabbit; weight, 2.52 pounds.

Time. P.M.	Rec. temp.	Cal. temp.
2.13	104.0°	64.59°
3.13	103.6°	64.96°

.37°

3.25 .0075 gramme antifebrin injected hypodermically.

Time. P.M.	Rec. temp.	Cal. temp.
3.55	103.2°	65.59°
4.55	102.6°	66.14°

.55°

RESULTS.

Hourly heat dissipation.....	14.15
Hourly heat production.....	13.32
Hourly heat dissipation.....	22.40
Hourly heat production.....	21.15

SUMMARY.

Hourly heat dissipation before antifebrin.....	14.15
Hourly heat dissipation after antifebrin.....	22.40

Gain in heat dissipation.. 8.25

Hourly heat production before antifebrin..... 13.32

Hourly heat production after antifebrin..... 21.15

Gain in heat production..... 7.83

Experiment 8.—Rabbit; weight, 4.48 pounds.

Time. P.M.	Rec. temp.	Cal. temp.
1.37	102.4°	66.59°
2.37	102.2°	67.14°

.55°

3.02 .0075 gramme antifebrin injected hypodermically.

Time. P.M.	Rec. temp.	Cal. temp.
3.32	102.8°	67.79°
4.32	102.0°	68.39°

.60°

RESULTS.

Hourly heat dissipation.....	22.14
Hourly heat production.....	21.39
Hourly heat dissipation.....	24.16
Hourly heat production.....	21.19

SUMMARY.

Hourly heat dissipation before antifebrin.....	22.14
Hourly heat dissipation after antifebrin.....	24.16
Gain in heat dissipation.....	2.02
Hourly heat production before antifebrin.....	21.39
Hourly heat production after antifebrin.....	21.19
Loss in heat production.....	.20

Experiment 9.—Rabbit; weight, 2.22 pounds.

Time. P.M.	Rec. temp.	Cal. temp.
1.41	103.4°	67.09°
2.41	102.0°	67.64°
		.55°

3.25 .06 gramme antifebrin injected hypodermically.

Time. P.M.	Rec. temp.	Cal. temp.
4.00	102.0°	68.49°
5.00	102.2°	68.81°
		.32°

RESULTS.

Hourly heat dissipation.....	21.91
Hourly heat production.....	19.34
Hourly heat dissipation.....	11.89
Hourly heat production.....	12.26

SUMMARY.

Hourly heat dissipation before antifebrin.....	21.91
Hourly heat dissipation after antifebrin.....	11.89
Loss in heat dissipation.....	10.02
Hourly heat production before antifebrin.....	19.34
Hourly heat production after antifebrin.....	12.16
Loss in heat production.....	7.08

Experiment 10.—Rabbit; weight, 2.76 pounds.

Time. P.M.	Rec. temp.	Cal. temp.
3.24	102.0°	68.15°
4.24	102.4°	68.18°
		.03°

4.50 .045 gramme injected into jugular vein.

Time. P.M.	Rec. temp.	Cal. temp.
5.09	102.3°	68.95°
6.09	103.4°	69.17°
		.22°

RESULTS.

Hourly heat dissipation.....	.0588
Hourly heat production.....	.9751
Hourly heat dissipation.....	8.0025
Hourly heat production.....	10.5198

SUMMARY.

Hourly heat dissipation before antifebrin.....	.0588
Hourly heat dissipation after antifebrin.....	8.0025

Gain in heat dissipation..... 7.9437

Hourly heat production before antifebrin.....	.9751
Hourly heat production after antifebrin.....	10.5198

Gain in heat production..... 9.5447

Experiment 11.—Rabbit; weight, 2.76 pounds.

Time. P.M.	Rec. temp.	Cal. temp.
2.33	101.0°	70.15°
3.33	102.2°	70.24°
		.09°

3.58 .015 gramme antifebrin inj. into jugular.

Time. P.M.	Rec. temp.	Cal. temp.
4.20	102.4°	70.45°
5.20	103.6°	70.54°
		.09°

RESULTS.

Hourly heat dissipation.....	1.88
Hourly heat production.....	4.63
Hourly heat dissipation.....	2.37
Hourly heat production.....	5.12

SUMMARY.

Hourly heat dissipation before antifebrin.....	1.88
Hourly heat dissipation after antifebrin.....	2.37

Gain in heat dissipation..... .49

Hourly heat production before antifebrin.....	4.63
Hourly heat production after antifebrin.....	5.12

Gain in heat production..... .49

To better compare the results obtained in the foregoing experiments I have tabulated them as follows :

Table No. 1.—Antifebrin Experiments on Normal Animals.

Experiment.	Duration.	Weight of animal.	Dose.	Hourly heat dissipation.				Hourly heat production.			
				Normal.	After drug.	Decrease.	Increase.	Normal.	After drug.	Decrease.	Increase.
3	2	3.26	.045	10.42	24.72	.....	14.30	10.96	23.10	.....	12.14
4	2	2.28	.015	16.20	12.76	3.44	.....	13.22	11.91	1.31	.....
5	2	2.29	.015	10.96	12.54	.....	1.58	10.96	10.19	.77	.....
6	2	2.74	.015	15.58	16.68	.....	1.10	15.58	13.04	2.54	.....
7	2	2.52	.0075	14.15	22.40	.....	8.25	13.32	21.15	.....	7.83
8	2	4.48	.0075	22.14	24.16	.....	2.02	21.39	21.19	.20	.....
9	2	2.22	.06	21.91	11.89	10.02	.....	19.34	12.26	7.08	.....
10	2	2.76	.045	.0588	8.0025	.....	7.94	.9751	10.5198	.....	9.5447
11	2	2.76	.015	1.88	2.37	.....	.49	4.63	5.12	.....	.49

To simplify a little further I have arranged

Table No. 2.

	Heat dissipation.	Heat production.
+	14.30 +	12.14 +
	1.58 —	7.83 —
	1.10 —	9.54 +
	8.25 —	.49 +
	2.02 —	.....
	7.94 +	.....
	.49 +	.....
—	3.44 —	1.31 —
	10.02 +	.77 —
	.....	2.54 —
	.....	.20 —
	.....	7.08 +

The plus and minus signs in the first column indicate respectively increase and decrease of heat dissipation and heat production.

The same signs after the heat units expressed indicate (relatively) large and small doses.

Examination of the results as exhibited in Table 2 shows an increase of heat dissipation in seven of the nine experiments and a decrease of heat production in five.

The only deduction that can be made is evident in the table itself, viz., that the antipyretic action of antifebrin is due principally to an increase in heat dissipation aided in more than half the cases by a decrease in the production. Also that, relatively speaking, both large and small doses increase heat dissipation, while as to heat production large doses seem to increase and small doses to diminish it.

Upon examination of the above plate where we have the curves of heat production and heat dissipation so placed as to show their relation to one another, and also to the dose and temperature, it will be observed that an alteration in the normal relation of heat dissipation and heat production occurs in Experiments 5, 6, and 8, where there is an increase of dissipation occurring synchronously with a decrease of heat production instead of a corresponding increase in heat production, since in health increased heat dissipation provokes increased heat production and decreased dissipation decreased production; while, on the other hand, increased heat production is always attended by increased dissipation, and *vice versa*, thus keeping the bodily temperature uniform.

The following experiments were then made to note the relation existing between the temperature and the pulse after the administration of the drug.

Experiment 12.—Rabbit.

Time. P.M.	Pulse.	Press.	Temp.	Remarks.
2.20	...	.....	100.6°	Canula put in jugular vein.
2.44-45	61	130	.....	Respiration 34.
2.45	68	130	.....	.03 gramme of antifebrin injected into jugular vein.
2.46	67	122	.....
2.47	66	130	99.6°	
2.48	69	126	.....
2.49	66	136	.....
2.50	67	130	.....	Respiration 36.
2.51	68	130	.....
2.52	66	134	.....
2.53	67	128	.....
2.54	67	136	.....
3.03	...	.....	99.4°	Respiration 44.
3.14	...	.....	99°	Respiration 44.
3.28	...	.....	98.8°	
3.30	60	114	98°	
3.32	...	.....	.....	Rabbit killed.

Experiment 13.—Normal rabbit.

Time. P.M.	Pulse.	Press.	Temp.	Remarks.
2.15	...	...	97.6°	Respiration 80; temperature before being put on the holder was 103.2°, respiration 56.
2.17.15	50	76	.....
2.17.45	51	76	.....
2.18	51	76	.....	.015 gramme antifebrin injected into jugular.
2.19	50	76	.....
2.20	52	88	.....
2.21	...	90	.....
2.22.15	52	92	.....
2.25	...	...	97.6°	Respiration 48.
2.34	...	100	97.6°	
2.35.15	47	114	.....
2.37	...	.....	97.4°	Respiration 38.
2.40.15	53	104	.....
2.47	...	.....	96.8°	
2.50	...	.....	.....	Struggling.
2.51	...	.....	.....	Tremors.
2.55	...	.....	.....	Struggling.
3.04	...	106	96.8°	Respiration 34.
3.10	...	.....	.....	Struggling.
3.15	...	.....	96.4°	Respiration 30; rabbit killed.

Experiment 14.—Normal rabbit; antifebrin.

Time. P.M.	Pulse.	Press.	Temp.	Remarks.
3.52	...	.....	102.6°	Respiration 72.
3.54.30	...	114	.....
3.54.45	68	118	.....
3.55	71	114	.....	.027 gramme antifebrin into jugular vein.
3.56	70	120	.....

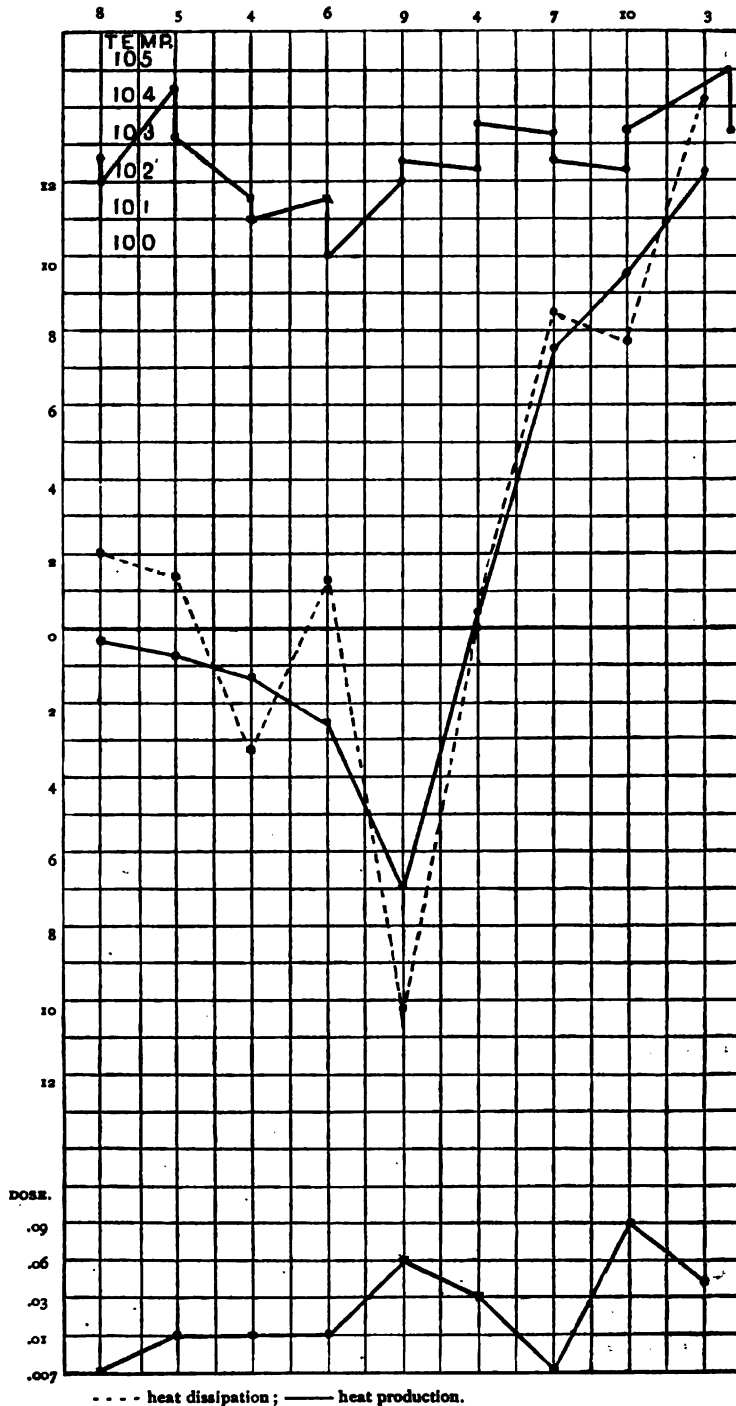


PLATE I.—The dotted line shows heat dissipation and the straight line heat production; the curves above and below the zero line, which is the normal line, mean so many units of increase or decrease of heat production or heat dissipation after the use of the drug.

The dose curve is at the bottom of the plate, while the temperature curve is at the top. Thus, in Experiment 9, the dose is .06 gramme, heat production and heat dissipation are diminished, and the temperature rose from 102.2° to 102.4° .

Time. P.M.	Pulse.	Press.	Temp.	Remarks.
4.05	76	114	102.6°	.075 gramme hypodermically.
4.10	...	.....	101.6°	Respiration 64.
4.12	...	120	.....	.015 gramme injected into femoral vein.
4.30	...	.....	100.6°	Respiration 52.
4.36	...	128	.....
4.38	69	126	.....	Tremors.
4.54.15	78	120	100.4°	Respiration 56.
5.05	...	118	.....
5.10	...	120	100.4°	Respiration 44; rabbit killed.

Experiment 15.—Rabbit; antifebrin.

Time. P.M.	Pulse.	Press.	Temp.	Remarks.
2.15	...	.....	103°	Respiration 32.
2.20	...	.....	100.4°	After preparation of the jugular.
2.36	...	.....	100.4°	Respiration 28; tremors.
3.00	...	.....	99.4°	Respiration 36; tremors.
3.00.15	66	118	.....
3.01	70	114	.....	.015 gramme injected into jugular.
3.01.30	72	114	.....	.015 gramme into jugular.
3.02.30	67	116	.....
3.03.30	...	120	.....	.03 gramme into jugular.
3.10.45	60	96	99.8°	Respiration 40.
3.23	...	96	99.4°	Respiration 22.
3.35	...	100	.....
3.41	...	.....	100°	Breathing irregular.
3.48	...	102	.....
3.51	57	90	.....
4.00	...	.....	99.4°	Respiration 32; rabbit killed.

The increased heat dissipation observed in a majority of these experiments is evidently not due to a fall of blood-pressure, since the pressure seems to rise instead.

The temperature reduction is also not caused by a fall of blood-pressure, because the facts are to the contrary.

Hence the increased heat dissipation must be due to causes other than circulatory disturbance.

Clinically the drug has been found to increase the pressure and slow the pulse, but this is always in fever, where Müller* asserts the antipyretic effect rarely fails to follow its administration, appearing at the end of the first hour, attaining its maximum at the end of the third, and sometimes persisting for ten hours.

In all my experiments where doses were employed relatively equivalent to those which have given such satisfactory results clinically the temperature invariably fell, the smallest reduction being .4°, while in one case (Experiment 6) it was 1.6°, and this in the normal animal.

Certainly a most favorable indication of its possible action in fever.

The truth or falsity of this will, however, be demonstrated in a future study of its effect upon the fevered animal.

ERGOTINE IN INTERMITTENT FEVER.

DR. S. L. SAVITSKI, writing in the *Vratch* on the value of ergotone in the treatment of intermittent fever, remarks that the drug has been used with success in the treatment of many affections,—e.g., by Vidal in prolapsus recti, by Hunt and Pepper in diabetes, by Saunders, Murrell, and Noakes in diabetes insipidus, by Allan for the cough in some lung-affections, by Granzio in obstinate constipation, by Gauldmel in the night-sweats of phthisis, by De Martini in spermatorrhœa, by Demange in some forms of typhoid fever, and by Girma in general paralysis. It has been also employed in chorea and in dysentery. The theory of its action in these diseases he does not pretend to expound, but he calls attention to the similarity of the action of quinine and ergotone. Both, he says, undoubtedly cause contraction of the uterus and the spleen, the effect of quinine on the uterus having been scientifically worked out in a dissertation published by T. T. Smolski in 1876, and that of ergotone on the spleen having been shown by Dobodchiki (*Vratch*, 1880) and by Semchenko (*Vratch*, 1883). This similarity led him to think that one of these drugs might serve as a substitute for the other, and he therefore made a large number of observations on the effect of ergotone upon the cases of intermittent fever occurring in the Lubinski regiment with excellent results, especially where an enlarged and tender spleen was present. He finds that a combination of ergotone with quinine acts very satisfactorily, and that in this way considerable quantities of quinine can be saved, as half the dose of quinine which would be required if given alone will suffice if combined with ergotone. The preparation of ergotone used was Bonjean's, the dose in chronic cases being about a grain three times a day.—*Lancet*, February 19, 1887.

* "Antifebrin," *Gaz. Méd. de Strasbourg*, November 1, 1886.

The Therapeutic Gazette

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DETROIT, MICH., April 15, 1887.

GEO. S. DAVIS, Medical Publisher, Box 470.

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Leading Articles.

SALOL AS AN ANTIRHEUMATIC AND ANTISEPTIC.

WE have already several times referred to salol as an antiseptic and valuable antirheumatic remedy. As our readers will recollect, this substance is a white powder, without taste, and of an aromatic odor, which may be made by substituting one atom of hydrogen of salicylic acid by the radical phenyl. The substance has recently been subjected to careful study by Drs. Bielschowsky, Rosenberg, and Feilchenfeld, whose papers are published in the second number of *Therapeutische Monatshefte*, a new therapeutic journal, edited by Liebreich. Dr. Bielschowsky reports nineteen cases of acute rheumatism, fourteen of which he designates as especially severe, most of them implicating several joints, and in all of which cure resulted. In eight cases the disease returned, but again was cured by a repetition of the administration of salol, smaller quantities now being required than at first. The disease returned in nearly half the cases cured by this remedy. The number of cases are so small, it is perhaps not to be concluded that a recurrence of rheumatism after treat-

ment with salol is to be dreaded any more than when any other drugs are used. The same author also reports six cases of chronic rheumatism in which the drug appeared to produce no improvement.

Dr. Rosenberg's experience, although he publishes no details, is also favorable to the employment of this remedy. He states that from twenty-four to forty-eight hours only is required in the absolute reduction of fever and pain; the longest time elapsing before relief was obtained occurring in a single case on the fifth day. Dr. Rosenberg also found that in many of his cases recurrence took place in spite of the continuation of small doses of salol. He believes that recurrence of the rheumatic affection more frequently follows the use of salol than with the old treatment by salicylic acid.

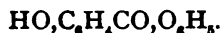
Salol should be given in capsules, since it is insoluble in water, although soluble in alcohol. Seventy-five grains may be given in the commencement of a case of acute rheumatism, 15 grains being given every two hours; as soon as fever and pain are relieved the dose may be reduced as low as 30 grains a day, still, however, being given in doses of 15 grains.

It would appear that salol is not entirely free from certain drawbacks, since Dr. Bielschowsky noted four cases in which the action of the heart was slightly disturbed, disappearing, however, on the cessation of the administration of the drug, while in Dr. Rosenberg's experience its administration was powerless to prevent numerous complications of rheumatism, and he refers to several cases in which peri- and endocarditis and pleurisy complicated the affection. Occasionally salol, as is the case in the old salicylic treatment of rheumatism, produces ringing in the ears, sweating, nausea, and vomiting, the sweating being, however, less marked than after the use of salicylates. These unfavorable actions are said to occur in almost all cases, although, of course, in different degrees. Salol when pushed leads to the production of a dark green color in the urine, as in carbolic acid poisoning, which is supposed to be due to the splitting up of salol under the influence of the pancreatic ferments, and its elimination through the urine as salts of salicylic acid and sulpho-phenol. The production of this decomposition in the intestine will explain its value as a powerful disinfectant in intestinal affections, as well as its employment as an external dressing as a substitute for iodoform in the treatment of wounds.

It would appear, therefore, that salol acts as an antirheumatic simply through the salicylic acid which it sets free. It is, however, to be preferred to the latter, being equally efficacious, from the fact that irritation of the gastric mucous membrane is entirely avoided through the use of salol, which is insoluble in gastric juice, and, as mentioned, only breaks up in the small intestine into salicylic acid and phenol. Dr. Feilchenfeld especially calls attention to the use of salol in the treatment of vesical catarrh and pyelitis by its administration internally in doses of 15 to 45 grains. In his experience the employment of salol in all cases of catarrh of the bladder was accompanied by good results, the urine losing its alkalinity and becoming acid, and suppuration being reduced. This favorable action was observed in several cases where other means failed. He also refers to a number of other affections, especially of sluggish ulcers, where its employment was followed by very successful results.

Mr. A. Norman Tate, in a paper read before the Liverpool Chemists' Association on February 3, 1887 (*Pharmaceutical Record*, March 15, 1887), refers to the use of salol as an antiseptic, and believes it in this connection to be very efficacious and much superior to salicylic acid and the salicylates, and he anticipates very satisfactory results after longer trial. As an antiseptic agent it may be mentioned that one use suggested for it is for impregnating bandages or wool for surgical dressings, as it adheres more readily than salicylic acid.

Its preparation has been patented in Germany, England, and other countries, the number of the English patent being 8018, 1886, and it is stated that it may be prepared as follows: 1. Heating salicylic acid and phenol or naphthol with phosphorus pentachloride or phosphorus oxychloride. 2. Melting the sodium or other metallic compounds of the salicylic acid and phenol or naphthol together, with phosphorus pentachloride and phosphorus oxychloride. 3. Treating with phosphorus pentachloride or phosphorus oxychloride the crude product of the reaction obtained in the manufacture of salicylic acid; and, as Mr. Levenstein points out, this last method is probably the most likely to produce the most economical results. The formula of salol, or salicylic phenol ether, or phenol salicylate, is given as



If phenol is replaced by resorcinol, resorcinol salicylic ether may be obtained.

As an antiseptic it may be mentioned that it has neither caustic nor irritating properties, and this is an advantage over some antiseptics now largely employed.

Its special properties have been variously attributed, as, for example, to the phenol it contains, and to the special combination of that substance and salicylic acid, and the liberation of both within the system.

Judging from samples Mr. Tate has examined, he concludes that salol, as supplied commercially, contains about thirty-six per cent. of phenyl.

IS DRUMINE A LOCAL ANÆSTHETIC?

IN a recent issue we referred to an account of some experiments by Dr. John Reid, of South Australia, in which he claimed to have discovered a new local anæsthetic which he termed drumine. As we at that time stated, we did not regard Dr. Reid's experiments as sufficiently accurate to prove the truth of his statements, and unfortunately some recent experiments with the same agent by Prof. Alexander Ogston (*British Medical Journal*, February 26, 1887) appear to confirm our views as to the unreliability of Dr. Reid's statements.

Dr. Ogston received the specimens which he experimented with directly from Dr. Reid. He tested it by injecting 4 minims of a four per cent. solution hypodermically into two persons who were to be operated on, but failed to obtain the slightest anæsthetic results. He also experimented on himself and on a medical student, and found, likewise, that there was no anæsthesia produced, but a tolerably severe pain, which lasted for several days and then disappeared. He then increased the dose to 6 minims, and again found that there was no anæsthesia, but a sharp, aching pain, followed by an area of firm swelling and tenderness over a spot of the size of a crown piece, a result not produced by the alcohol used in the making of the solution when employed alone. The site of the injection remained tender and swollen for weeks.

It was also employed by Mr. Ogston by instillation into the conjunctiva in a number of cases, and produced no anæsthesia, and had no perceptible action upon the pupil or accommodation.

These experiments seem to indicate pretty clearly that drumine as a local anæsthetic has little if any effect, and certainly cannot be compared with cocaine. It is, however, possible

that the specimens with which Mr. Ogden experimented may have undergone decomposition from their voyage from the antipodes. Nevertheless, until the subject has been investigated by a thorough chemist and some one familiar with the methods of pharmacological investigation, we cannot look to find a rival of cocaine in Dr. Reid's Australian anæsthetic.

A SUBSTITUTE FOR MASSAGE.

THE importance of massage in the treatment of various local and constitutional conditions becomes daily more generally recognized. Ten years ago the procedure was scarcely practised in this country, although almost from time immemorial it has been used in Oriental lands. Before the recent changes in the government and laws of Japan its practice was confined by law to the blind, who were thus enabled to make a livelihood in a manner for which they are especially fitted by the peculiar development of the touch-sense which is so apt to follow loss of vision in early life. Provided with a sort of flageolet, the sightless masseur still gropes his way along the streets and lanes of Japan, tooting his instrument to give notice of his presence. In this country we have never known of a blind person practising the art, and we are rather surprised that the managers of blind asylums have never had their attention called to this possible avenue for labor open to their pupils.

Massage acts chiefly by influencing the local circulation in the part which is labored with. The chief objection to it is the skill which is required for its practice and the expense which it therefore entails, and more especially the difficulties of finding employment for its votaries, which forbid its use away from considerable centres of population.

As an aid to or possible substitute for massage, we can strongly recommend the muscle-beaters made by Mr. John G. Ruebsam, of Washington. They consist essentially of india-rubber tubes or balls, so arranged on elastic sticks as to simulate more or less closely the hand as employed in the beating movements of massage. They undoubtedly have the power of distinctly affecting the local circulation in the part beaten with them, and produce no pain or bruising. For the maintenance of nutrition in paralyzed limbs, for the warming of cold feet and other portions of the body which suffer from lack of

circulation, as in neurasthenia, for the stimulation of muscles affected with chronic rheumatism, as in chronic lumbagos, we have found them serviceable. When it is possible to obtain skilled massage, and the severity of the symptoms is sufficient to warrant its employment, the muscle-beater may be very well used once a day as an assistant, so to speak, to the skilled attendant. Thus, in the evening it may be employed to aid the massage and manipulation of the morning.

TREE CULTURE.

BETWEEN the years of 1871 and 1878 the Acclimatization Society of Victoria published five contributions from the pen of Baron Ferd. von Mueller concerning such industrial plants as are available for cultivation in extra-tropical countries or in high mountain regions within the tropics. These contributions became the bases of publications in Victoria, in India, in New South Wales, and in Germany, and finally bore fruit in the present volume before us.* This is a work of nearly five hundred pages full of information concerning all kinds of plants, from the mushroom up, which may be suitable for cultivation in the United States. The work, of course, appeals to the agriculturist rather than to the physician, but we have deemed it proper to call the attention of our readers to the book, that such of them as are interested in the material prosperity of the country districts of America may in turn spread the information of its existence among those who may more directly apply its information to practical life. The scientific standing of Baron Ferd. von Mueller gives great authority to everything that he says.

A NEW THERAPEUTIC JOURNAL.

ALTHOUGH the German literature of experimental therapeutics has during the last few decades been worthy of our commendation, hitherto there has not been any German medical periodical of the first class devoted exclusively to the subject of practical and scientific therapeutics. We therefore welcome to our editorial table very warmly

*"Select Extra-Tropical Plants, readily Eligible for Industrial Culture or Naturalization." By Baron Ferd. von Mueller. Detroit, Mich.: George S. Davis, 1884.

the *Therapeutische Monatshefte*, edited by Dr. Oscar Liebrich and published by Julius Springer, of Berlin, the first two numbers of which we have found of great interest both from a scientific and practical view. The periodical is a monthly one, each number containing about eighty pages.

Reports on Therapeutic Progress.

SUTURE OF THE MEDIAN NERVE TEN WEEKS AFTER DIVISION, WITH RECOVERY OF FUNCTION.

At a recent meeting of the Royal Medical and Chirurgical Society Mr. J. BLAND SUTTON read a paper containing the details of the case of a porter, who, through the bursting of a soda-water bottle, sustained a deep wound of the wrist. The median nerve had been completely divided, and the parts supplied by it were deprived of motion and sensation below the point of section. Ten weeks after the accident the ends were found by dissection, the cut ends vivified and united by suture. Sensation began to return in five days. The most important feature in the case was the ease with which the ends of the severed nerve were found by following the rules which had been gained by studying the effects of neurotomy in horses. A list of previous cases of secondary nerve-suture accompanied the paper.

MR. HOWARD MARSH said he felt much obliged to the author of the paper, for the subject was an important one, and the operation comparatively recent. He had seen several cases, and estimated the results as uncertain.

MR. HOLMES remarked that Mr. Sutton seemed to set much value on the knowledge he had gained from neurotomy in horses, where he had observed a cord running from one end of the divided nerve to the other, and serving as a guide in the search for the other end so soon as one is found. He could not think that any such guide was to be found in most cases in the human subject, especially when there had been any laceration about the division of the nerve, or any suppuration round it. He regarded the operation as common, the benefit as uncertain, but he should certainly recommend it if the nerve-ends could be found; in fact, in such a case he should think the operation urgent. In his own practice he had had a remarkable case, where the nerve had been divided six or seven months; the ends were then sewed together, and though

there was no improvement in function for the next three or four months after union, there was ultimately complete recovery. His colleague, Mr. Pick, had had a case in a boy, in which after nerve-suture there was no immediate improvement, and the boy was sent away from the hospital as a case of complete failure. After the long suspension of recovery which had been noticed in the other case it was thought worth while to make further inquiries after the boy, and these showed that he also had recovered completely after a long interval. The best prospects for the operation were that the injury should have been both simple and recent.—*British Medical Journal*, January 15, 1887.

A NEW REMEDY FOR ITCHING PILES.

R Tinct. capsicum, 1 part;
Spts. turpentine, 2 parts;
Spts. camphor, 3 parts;
Decolorized iodine, 3 parts. M.

—*Chicago Med. Times*, February, 1887.

SALOL IN ARTICULAR RHEUMATISM.

An address on salol and its employment in articular rheumatism and other acute febrile diseases was delivered before the Berlin Medical Society on January 10 by DR. HERRLICH (*Medical Press*, February 9, 1887). He first referred to the investigations made by Nencki and Sahli into its composition and therapeutical effects. According to these observers it is a salicylate of phenic ether, resembling fat in its behavior in the system in being decomposed by the pancreatic ferments into free acid and alcohol,—salicylic acid and phenol. Salol is a colorless crystalline body, with a weak aromatic odor, is almost tasteless, and practically insoluble in water. It never produces nausea, like salicylate of sodium, and is more readily taken. Sahli treated nearly all the cases of articular rheumatism in the poliklinik with it in daily doses of 6 to 8 grammes in individual doses of 2 grammes (30 grs.) each. It was always well borne in these doses. A strong salicylic acid reaction was found in the urine two hours after the first dose. There was no fear of carbolic urine appearing after the doses given. The drug contained forty per cent. of phenol and sixty per cent. of salicylic acid. There was no doubt that the antipyretic action was due mainly to the phenol. Singing in the ears was not always avoided, nor were endocarditic complications.

In addition to the good effects in acute and subacute articular rheumatism, a prompt action was observed in several cases of neuralgia in which salicin had proved inert, and also in *erythema nodosum* and *multiforme*, urticaria, and peliosis. In phthisis, Sahli recommends it in doses of only 0.5 gramme ($7\frac{1}{2}$ grs.). It is useful in all cases of diabetes.

Further indications for its employment, on account of the local antiseptic action of both its constituents as set free in the duodenum, were noticed. It is highly probable that it acts antiseptically in the intestinal canal, and it will therefore probably prove useful in intestinal catarrh, typhoid, and cholera.

Syphilitic and other ulcers were rapidly healed by being painted several times a day with salol in powder. It was also found useful in ozæna and otorrhœa, and a three per cent. solution formed an agreeable antiseptic mouth-wash.

Herrlich had used it in twenty-five cases of acute articular rheumatism, in a series of cases of chronic rheumatism, and in some cases of muscular rheumatism, lumbago, etc. It showed itself of decided benefit in the acute form. He could not say what part the carbolic acid played. In any case, the action was so rapid and striking that six grammes of salicylic acid did not correspond to it, so that it might be assumed that the carbolic acid played a part in the rapid improvement. Relapses and endocarditic complications were uninfluenced by it.

PHOSPHATIC DIABETES.

At a meeting of the Medical Society of London, held January 10, 1887, DR. RALFE brought forward a case of phosphatic diabetes, and read the particulars of twelve others (*British Medical Journal*, January 15, 1887). These he arranged in groups, in which excessive elimination of phosphoric acid occurred in connection (1) with derangement of the nervous system; (2) in relation to pulmonary disease; (3) as alternating with diabetes mellitus; (4) as running a distinct course like saccharine diabetes, only without sugar. The cases occurred mostly in young male adults, the chief features being great and progressive emaciation, thirst, increased appetite, a tendency to boils, cataract, a dense urine, with or without increase of the other urinary constituents, but always an exaggerated excretion of phosphoric acid. The causes that led to this increased elimination of phosphoric acid were not definitely determined; probably two

factors were concerned, namely, inability of the tissues to utilize the phosphorus brought to them, and also an excessive formation of acid in the tissues dissolving out the earthy salts. The prognosis in cases associated with derangement of the nervous system or with pulmonary disease was very gloomy; on the other hand, it was a favorable sign when in diabetes mellitus the sugar was replaced by phosphoric acid. Out of three cases related, two had completely recovered, whilst the third was running a very mild course. With regard to the term phosphatic diabetes, it was evident that the increased elimination of phosphoric acid was symptomatic and not a disease *per se*; it would be improper, therefore, to use the term in that sense, but it would be useful as a distinctive appellation to distinguish between phosphaturia, caused by deposition from alkaline urine, but without excess, and the enormous discharge of phosphoric acid, met with in urines, but not necessarily deposited from them.

VASELINE IN THE HYPODERMIC INJECTION OF ANTISEPTICS.

MEUNIER, of Lyons, considers vaseline as diffusing itself very rapidly through all the tissues of the body; its diffusibility varies inversely with its consistence, which may be that of a perfect liquid or that of wax; it preserves its diffusibility when holding in solution a microbicide. Antiseptics dissolved in vaseline, when injected beneath the skin or applied upon a wound or a mucous surface, are diffused without exciting pain or reaction, provided that the substances used be pure and in doses which can be tolerated; the dose and consistence of the dissolvent must be varied according to the organ treated.

The method of treatment is as follows:

Among the antiseptics used in these experiments upon animals were carbon bisulphide, carbolic acid, camphor, creasote, salol, chloride of camphor, iodoform, thymol, essence of cubebs, oil of santal, copaiba, oil of cinnamon, turpentine, thyme, eucalyptus, mint, koussou, and most of the vegetable alkaloids. After these solutions had been tried successfully upon animals, they were employed upon men. These are the formulæ:

Eucalyptol (pure), 5 parts;

Chemically pure vaseline, 20 parts by weight.

The injections are made upon the outer side of the thigh. The dose tolerated varied

from 15 minims to $3\frac{3}{4}$ drachms and more, daily.

Eucalyptol (pure), $\mathfrak{m}\text{xxv}$;
Iodoform, $\mathfrak{m}\text{iv}$;
Vaseline (pure), $\mathfrak{z}\text{v}$.

The dose tolerated is the same as for the first mixture.

Carbon bisulphide, $\mathfrak{m}\text{xxv}$;
Vaseline (pure), $\mathfrak{z}\text{iv}\frac{3}{4}$.

Of this mixture, 15 to 30 minims, and more, can be given daily, provided small doses are used.

Turpentine, pure (prepared after the method of Berthelot), $\mathfrak{m}\text{xxv}$;
Vaseline (pure), $\mathfrak{z}\text{v}$.

From $\mathfrak{m}\text{xxv}$ to $\mathfrak{z}\text{iiss}$ may be given daily.

It is of the utmost importance that these substances should be chemically pure, and that they be given with the greatest accuracy in measuring the doses.

All impure vaselines turn black in contact with sulphuric acid. Most samples of commercial vaseline give the following reaction :

When saturated with the purest carbolic acid and slowly heated, it becomes rose-colored, but deposits a violet precipitate. The intensity of the violet color of the precipitate increases on the addition of alcohol ; and the color, which is probably aniline in its nature, indicates the presence of nitrogenous impurities which are dangerous ; the abundance of the precipitate is in proportion to the amount of impurity present.

In every test made pure vaseline did not give these reactions, and also gave no pain or reaction when injected into animals.

Among antiseptics the essences are nearly all impure. For example, commercial essence of eucalyptus has a strong odor, an acrid taste, an acid reaction, and boils at 80° ; its active principle, eucalyptol, which boils at 175° (Cloëz), forms only a third or a half of the commercial article. The same is true of turpentine and its essential element, and of other substances mentioned. Almost all essences contain resins which should not be introduced into the economy. When these articles are mixed with pure vaseline these resins are precipitated, and may be separated by filtration. Pure eucalyptol is not precipitated by vaseline. To prepare for injection, these antiseptics should be thoroughly shaken with the pure vaseline, allowed to stand, and filtered through two Berzélius filter-papers.

Experiments upon animals with these solutions were made in the treatment of the fol-

lowing diseases : fistulous, fungous, tuberculous, and cystic tracts ; favus, herpes tonsurans, alopecia, psoriasis, eczema, acne, and venereal lesions ; albugo, granular eyelids, glaucoma ; puerperal fever.

Animals were also treated for anthrax, scab, farcy, and tuberculosis, general and local.

In all the trials made albuminuria was never produced, even when a temperature of 104° F. was reached and large doses were given. Among many interesting and important observations made was the injection into the lung of a horse of $\mathfrak{z}\text{v}$ of a solution of eucalyptol, $\mathfrak{z}\text{v}$ of a solution of bisulphide of carbon, without unfavorable reaction ; 10 drops of eucalyptol solution were injected into the eye and windpipe of a rabbit ; 15 drops into the eye of a sheep ; $\mathfrak{z}\text{iiss}$ under the skin of a horse. Pure vaseline was injected in the following heroic doses under the skin of a horse weighing eight hundred pounds :

First injection, $\mathfrak{z}\text{viiss}$.

Second injection, $\mathfrak{z}\text{xiv}$ four hours after the first.

Third injection, $\mathfrak{z}\text{ix}$ ten hours after the second.

In all, one kilogramme (about two and one-fifth pounds) in twenty-four hours.

The whole was well borne by the animal ; more could have been tolerated ; the best point of injection was at the animal's side ; diffusion was instantaneous when the point of injection was rubbed with the hand.

Regarding the use of impure vaseline, a case is cited in which the injection of $\mathfrak{m}\text{xxv}$ of impure vaseline, injected into the arm, resulted in phlegmon and the formation of a pint of pus. These solutions are also appropriate for the making of antiseptic dressings, and the surgeon can thus make for each case the appropriate dressing, as the circumstances of the case indicate.—*Bulletin Général de Thérapeutique*, January 15, 1887.

DECOMPOSITION OF ANTIFEBRIN IN THE BODY.

WENDRINER, in the *Centralblatt für Medicinischen Wissenschaften*, No. 8, 1887, describes the following tests for antifebrin : If a small quantity of antifebrin be added to normal urine, and the fluid be made strongly alkaline with caustic soda and distilled, aniline is found in the distillate. The urine of patients who have taken antifebrin, however, gives no such reaction for aniline, but antifebrin is decomposed in the organism. Such urine, when

distilled with an acid, gives a considerable amount of phenol, whereas in urine of those who are not taking antifebrin but a faint trace is present. The quantity of the phenol eliminated is about five and one-half per cent. of the antifebrin taken.

THE TREATMENT OF MALARIAL DISEASES BY PICRATE OF AMMONIUM.

Picrate of ammonium possesses valuable therapeutical properties, though it does not seem to have received the attention it deserves. Its properties and uses were first investigated by Dr. Dujardin-Beaumetz in 1872, but it now appears to have passed out of mind. In the *Lancet* for February 19, 1887, MR. H. MARTYN CLARK, of the Amritsar Medical Mission in India, states that his attention was attracted to it accidentally in the following way. He had a patient under his care who had suffered for several months from severe intermittent fever of the quotidian type. Quinine, arsenic, and other antiperiodics had been used freely, but without relief, and after ten days' treatment the fever still recurred daily with its accustomed severity. At this time the local chemist told him of a remedy for fever which he had received some years previous, but had never employed it. This Mr. Clark found to be the picrate of ammonium, and he gave it to his patient with very gratifying results. The fever did not recur the next day nor at any time during the three subsequent months in which the patient remained under observation. Mr. Clark states that he has since then used the picrate of ammonium in the treatment of malarial diseases during a period of four and a half years. He claims that he has treated over ten thousand cases with this agent with the happiest results. So uniformly successful has it been that he has practically given up the use of quinine and cinchona alkaloids in the treatment of intermittent fever, and he has substituted picrate of ammonium for them. The record was kept of five thousand cases of this fever treated with this agent. Of this number, in nine cases only did it fail to cure, and in these quinine succeeded at once.

He usually gives it in doses of from $\frac{1}{8}$ grain to $1\frac{1}{2}$ grains four times a day in pill; $\frac{1}{2}$ grain is a fair average dose. Thus given the result is soon visible. In the cases treated, $\frac{1}{2}$ -grain doses in the interval prevented the recurrence of the next attack of the fever, while in about twenty per cent. of the patients two or three attacks followed before the fever ceased. In

one case of quartan ague, despite large doses of the salt, the fever recurred for six periods, gradually diminishing in intensity, and then yielded to it. It is equally successful in all the forms of ague, but it is a curious fact that the cases in which it failed to cure were all of the tertian variety. He has also employed this agent in the treatment of twenty-five cases of malarial neuralgia of various nerves, six cases of malarial headache, and one of malarial colic. In all these instances it cured completely and speedily. In remittent fever it does not appear to be of use; six cases of a severe type were treated with it without any effect. Neither is the enlarged spleen of ague benefited by it. Mr. Clark has given it in numbers of such cases in conjunction with ergotine with good results, but such results are secured equally by the use of the ergotine alone.

The writer's experience leads to the conclusion that in all varieties of intermittent fever, and in malarial neuralgias, picrate of ammonia is a valuable antiperiodic, and it is an efficient and perfect substitute for quinine. It has the following advantages over quinine:

1. It is much less expensive. This is an important consideration where, as in Indian practice, hundreds of cases of malarial diseases have to be treated annually.
2. The dose given is very much smaller.
3. It does not produce the unpleasant effects that quinine does,—headache, deafness, tinnitus, etc.,—nor does it disorder the digestion or cause nausea, as quinine is apt to do, in the doses in which it has to be given in India.

THE TREATMENT OF HÆMOPTYSIS BY ATROPINE.

HAUSMANN, of Meran, in discussing the above subject, cites the dictum of Traube, that the successful treatment of hæmoptysis consists in the formation of a thrombus in the vessel chiefly concerned, a result best accomplished by lessening the force of the blood stream and also the lumen of the vessel. Although in capillary hemorrhage it is impossible to make smaller the aperture from which blood is escaping, we can endeavor to lessen the calibre of the arterioles, and thus diminish the force of the current of blood in the capillaries. This lessening of blood-pressure may be aided by restricted diet, ice, absolute quiet, digitalis, and agents acting upon the vasomotor nerves by an astringent or reflex action. Traube mentions as a list of hæmostatic agents digitalis, acetate of lead, alum,

tannic acid, the astringent preparations of iron, and several mixtures, as Chopart's. The first agents of this list Traube would use in inflammatory conditions; the second portion would be used against severe hemorrhage. He advises that if no effect is produced by one agent it be promptly replaced by another; and advises morphine injections for pain or mental disturbance.

Ergotin and oil of turpentine have been added to the number of drugs used, but unimportant hemorrhages have been best treated by dietetic means and by rest. Sée employs preparations of turpentine, terpine, ergot, and, as a last resort, morphine subcutaneously and alcohol. The writer has given wine with good results in bleeding from passive venous congestion, and recommended exercise and deep breathing as remedial agents; while in active bleeding, rest, ice, and morphine have been found of great value. It is often the case, however, that all remedies are unavailing, and daily hemorrhages persist.

Too energetic treatment is naturally not indicated. Patients often bear medicines badly, and the physician is forced to have recourse to the oldest modes of treatment,—binding the lower extremities; the application to the genitalia or inner surface of the thigh of cold compresses in rapid succession; cold compresses also applied to the chest and over the shoulders, which resulted in some instances in pressure upon the subclavian vein. All of these means, however, often proved useless.

In doubtful cases the writer has seen remarkably good results follow the use of subcutaneous injections of atropine, of which it is possible here to give but a few examples. In one case, which presented cavities in both apices, and had two dangerous hemorrhages daily for six days without a check, three physicians were present at the thirteenth hemorrhage, which was promptly checked by the subcutaneous use of sulphate of atropine in dose of $\frac{1}{100}$ of a grain. The same patient had hemorrhages two months after the first, which were checked by atropine only.

In the case of another patient who, during the winter of 1884, in spite of the best of care at San Remo, had suffered for months from pulmonary hemorrhage, which had ceased in summer, only to recur on the winter following for a long time, two hypodermic injections of atropine sulphate, in doses of $\frac{1}{100}$ of a grain, cured the hæmoptysis completely.

At the close of October the writer saw a pulmonary hemorrhage of severity in the case of a lady who had been treated for eight days

with injections of ergotin and with turpentine, etc., quickly checked by subcutaneous injections of atropine in doses ranging from $\frac{1}{100}$ to $\frac{1}{12}$ of a grain, once or more often repeated. —*Therapeutische Monatshefte*, January, 1887.

PEPSIN IN THE TREATMENT OF CHRONIC TROPICAL DIARRHŒA.

In the *Indian Medical Gazette* for December, 1886, MR. GEORGE HARRISON YOUNG reports three cases of chronic diarrhœa which had proved rebellious to the ordinary methods of treatment. In each of these cases the treatment was stopped, and the patient placed on a milk diet, a half-pint being taken every three hours, and 5 grains of pepsin given four times daily. The record of his cases appears to show that great benefit was derived from the use of pepsin. Mr. Young states that he has now used pepsin in a considerable number of cases, and always with success. He claims that this mode of treatment is especially applicable to that form of diarrhœa in which the motions are large and frothy. These cases are due to insufficient digestion and secondary fermentation of the food. When this form of disease becomes established astringents are useless and even often injurious. Pepsin at once checks the diarrhœa. Only milk diet should be allowed, and the pepsin may be given with the milk. In typhoid fever, the author claims that pepsin, by increasing digestion and assimilation of food, will thereby lessen the diarrhœa and intestinal irritation, and by so doing will diminish the severity of the disease. It is also useful in dysentery occurring in debilitated subjects.

CATHETERISM OF THE AIR-PASSAGES.

The introduction of a catheter into the larger air-passages, for the purpose of local medication or mechanical dilatation, or to obviate recourse to tracheotomy, has been much facilitated since the introduction of cocaine into laryngeal surgery. A paper recently read before the Medical Society of the Charité Hospital at Berlin by DR. LANDGRAF, clinical assistant (*Berl. Klin. Woch.*, 1887, No. 5), illustrates the ease with which the procedure is effected. He described a case presenting symptoms of stenosis of the left bronchus; the symptoms, which had gradually increased in severity, dating over two years. When admitted into the hospital last July, the patient was liable to dyspnœal

attacks; and physical examination led to the above diagnosis. The constriction was at first thought to be due to compression, a view which was borne out by the presence of a small area of dulness over the manubrium sterni and to its right. There was no evidence that this was due to a tumor arising in the bronchial glands. The long duration of symptoms negatived the existence of a malignant tumor, and the absence of bacilli in the sputum set aside the notion of tubercular disease. Aortic aneurism was more probable; but this diagnosis lacked confirmation, the only positive sign being the area of dulness. It was, therefore, thought to lie between syphilitic stricture (the patient had contracted syphilis twelve years previously) and aneurism; and, since the former gave a more hopeful prognosis, the patient was placed under anti-syphilitic treatment. But the dyspnoeal attacks increased in frequency, and measurement of the chest showed a diminishing capacity of the lungs. Further, an examination made at the beginning of October revealed what was thought to be a membrane deep down in the trachea. This appearance supporting the endo-bronchial character of the stenosis, it was resolved to resort to catheterism. The larynx was anæsthetized by a twenty per cent. solution of cocaine, and a ten per cent. solution was injected into the trachea. The catheter was easily passed to a distance of 28.5 centimetres from the teeth (found subsequently to correspond to the tracheal bifurcation) without meeting any constriction. The catheterism was repeated at intervals, and on several occasions to a depth of thirty-five centimetres, with a view to traverse the left bronchus. The measure produced so much relief that at the end of the month the patient was well enough to leave the hospital. Unfortunately, the diagnosis of stricture, which had been apparently confirmed by the relief of the symptoms, proved incorrect; for in a few weeks he returned, having had a severe asphyxial seizure, and shortly after died. The cause of the stenosis proved to be—what is by far the most common cause of such a condition—an aneurism of the aorta, which compressed the left bronchus. The condition, which was mistaken during life for a membrane, was an anæmic part of the right wall of the trachea. Although during life some irregularities in the mobility of the vocal cords were observed,—on one occasion the right cord moving less on respiration and phonation, and on another the left cord appearing im-

mobile in the middle line,—yet the dyspnoeal attacks could not be referred to involvement of the vagus. They must have been due to the compression of the bronchus, for they disappeared directly the narrowing produced by that compression was mechanically relieved. Dr. Landgraf fully recognized the danger of resorting to such mechanical dilatation in aneurismal cases, and he would hesitate to catheterize in any case in which aneurism could be suspected. Nor is it quite easy to account for the great relief temporarily afforded by the measure in this case. The valuable point learned from it is the ease with which the air-passages can be catheterized with the aid of cocaine, thus affording means to relieve strictures, as well as to apply remedies locally to ulcerated surfaces on the respiratory tract.—*Lancet*, February 19, 1887.

HYPNONE.

VON SCHÜDER writes of fourteen patients treated by acetophenon, or hypnone, in whom favorable results followed. A dose of from 2 to 4 drops was sufficient to produce sleep of several hours' duration; the effect was especially happy among the phthisical.

No ill after-effects were observed. In one case only, after 6 drops had been given, the patient awoke from a long sleep with headache and slight vomiting. The effect, dependent upon the dose and the individual peculiarities of each patient, was manifested after from one-half to one and one-half hours.—*Der Pharmaceut.*, February 1, 1887.

THE DURATION OF THE SYPHILOGENIC CAPACITY IN RELATION TO MARRIAGE.

At a meeting of the Medical Society of the County of New York held on February 28, 1887, Dr. P. A. MORROW read a paper with the above title, which is especially of interest as showing the most recent beliefs as to the probability of the transmission of syphilis after apparent cure (*Medical Record*, March 5, 1887). Dr. Morrow claimed that the fundamental characteristics of syphilis were two: first, prolonged virulence, and, second, susceptibility to hereditary transmission. What is the duration of the contagious stage of syphilis? A century ago the majority of syphilographers would have answered that it began and ended with the chancre. At the present day it is impossible to fix a definite limit when the syphilitic organism is cleansed

from the contagious element. The author of the paper then directed attention to the results of experimentation, and also to clinical evidence, which he regarded as conclusive that in the late tertiary stage the disease is still contagious. Especial attention was also directed to a paper published by Dr. F. N. Otis, in which the writer had taken a position that was opposed by an overwhelming mass of clinical testimony,—that is, that after the termination of the second year it was impossible for a man, all manifestations of syphilis having disappeared, to communicate syphilis. Dr. Morrow believed that the doctrine of the paternal transmission of syphilis was supported by most authorities on general medicine, and also by most syphilographers.

He concluded that there was nothing constant in contagion, and nothing certain in heredity; that the modern division of syphilis into secondary and tertiary periods did not furnish a safe criterion concerning the contagious or the non-contagious character of the lesions; that the chronological completion of the secondary stage did not mark the definite disappearance of the virulent principle; that in the immense majority of cases the contagious activity of syphilis, and its susceptibility of hereditary transmission, ceased after three or four years, but there were well-authenticated cases in which it manifested itself as far removed as five or six years, and even later; that the precise date, in the evolution of the diathesis, when the limit of its contagious or transmissive power had been reached, did not admit of mathematical expression; that this limit was materially influenced by the type of the syphilis, the character of the treatment, the presence or absence of certain conditions, etc., and that to fix the date at which a syphilitic man could marry with safety at three or four years, with or without treatment, and irrespective of the existence of specific lesions, was unwarranted by science or the teachings of experience.

The discussion was opened by Dr. F. N. OTIS, who maintained that all the processes of syphilis were processes of growth, characterized by cell-proliferation non-inflammatory in character, and that when the contagious element had been removed the disease was at an end; that beyond the secondary period of syphilis, however long that may be proved to be present, there was no contagion; that all the lesions of the tertiary period of syphilis were free from the contagious element, and were simply sequelæ of the disease; that the period at the end of which marriage could

take place with safety had, after thorough treatment, been fixed by the profession throughout the world as three or four years; that there should be, after thorough and prolonged treatment, an interval of a year or eighteen months, during which, without treatment, no syphilitic manifestation had appeared. These were statements in which all believed. For himself, he believed that the person was beyond the contagious stage of the disease at the end of three years, if proper treatment had been carried out. He claimed that, in view of the enormous mass of evidence presented, and of the general experience of authorities, wherever syphilis had been communicated at a period later than three or four years, it would be shown, in such cases, that the true source of the disease was in a lesion less than three years old.

TESTS FOR KAIRIN AND ANTIPYRIN.

KOHN gives, in the *Chemische Zeitung*, the following tests:

For kairin. A drop of solution of ferric chloride gives with a dilute watery solution of kairin a violet color, which changes suddenly to brown. An excess of ferric chloride gives a dark brown, and a concentrated solution a brownish-black precipitate.

Potassium bichromate gives with a neutral solution of kairin at first a dark color, from which a violet coloring-matter very soon forms, which gives with alcohol a mauve-colored solution.

Antipyrin gives with ferric chloride a red color, which is formed with very dilute solutions. Solutions of antipyrin give with nitric acid a clear, greenish-blue color; concentrated solutions deposit greenish crystals. This test reacts in dilutions of 1 in 10,000.

THE ACTION OF ACONITE UPON BODILY TEMPERATURE.

DRS. LAUDER BRUNTON and J. THEODORE CASH have, in a research upon the action of aconite upon bodily temperature ("St. Bartholomew Hospital Reports," vol. xxii.), reached the following conclusions:

1. That in pigeons aconite acts as an antipyretic, both in large and small doses.
2. This antipyretic action is exerted whether their body temperature be normal, or be artificially raised, or artificially reduced, at the time of the injection of the drug. In all

cases the injection causes the temperature to fall.

3. This fall is usually less in birds which have been artificially cooled than in birds whose temperature is normal, or has been raised artificially.

4. The action of the drug is apt to be modified by individual peculiarities in the birds which we are at present unable to explain.

5. The temperature returns more rapidly and completely towards the normal when the birds which have got aconite are kept in a warm place, although the primary fall induced by the administration of the drug may have been as great as, or greater than, that observed at medium temperatures.

6. A repetition of the dose after the effect of the first one has passed off causes a fall which is apparently uninfluenced by the first dose.

7. It is occasionally noticed that a large dose may cause a fall of temperature which is smaller but more prolonged than that caused by a smaller dose.

8. In guinea-pigs cooling appears to retard the fall of temperature caused by the drug, and also to retard the return to the normal.

9. The temperature of animals exposed to a heated atmosphere is but little affected by aconite; in fact, large doses may diminish the resistance of the animal to the effect of external heat, and cause the temperature of an animal to rise higher than that of one to which no aconite has been given.

10. If the animal be exposed to cold when the drug is administered, the fall of temperature is both more rapid and more extensive than in the normal animal.

THE TREATMENT OF COLDS.

DR. J. H. WHELAN states in the *Practitioner* for March, 1887, that he has found a combination of belladonna, quinine, and arsenic almost specific in aborting common colds if commenced in the early stage of the affection, while it is still confined to the nose and pharynx. The formula which he uses is the following:

R Quininae sulphatis, gr. xviii;
Liquoris arsenicalis, ℥xii;
Liquoris atropinae, ℥i;
Extracti gentianae, gr. xx;
Pulveris gummi acaciae, q.s. ut fiant pilulae xii.

Sig.—One every three, four, or six hours, according to circumstances.

Dr. Whelan states that at starting one pill

should be taken every three or four hours, and later on every six hours, and he believes that if a catarrhal subject has a box of these pills always at hand he will almost invariably succeed in aborting a cold.

He does not profess to explain how his remedy acts, unless it be as a powerful nerve and general tonic.

THE USE OF HYDRASTIS CANADENSIS.

FELLNER orders the fluid extract as follows:

R Ext. hydrastis fluid.,
Vini malagæ, aa ʒviiss;
Syrupi cinnamom., ʒxi. M.

Sig.—A teaspoonful or half-tablespoonful every four hours.

The alkaloids berberine and hydrastine are of similar action, and of these Fellner recommends berberine phosphate and hydrastine hydrochlorate as most soluble, in the following formulæ:

R Berberini phosphorici, gr. xv;
Dissolve in boiling water ʒv, and add
Vini malagæ,
Syrupi cinnamom., aa ʒiv.
Sig.—20 to 30 drops every two to four hours.

Also

R Hydrastine hydrochlorat., gr. xv;
Dissolve in distilled, boiling water, ʒiiss, and add
Aq. aurant. flor.,
Syrup. toltutan., or
Syrup. menthae pip., aa ʒiv.
Sig.—15 to 25 drops every two to four hours.

—*Therapeutische Monatshefte*, January, 1887.

THE TREATMENT OF EMPYEMA WITH PULMONARY GANGRENE BY PERFLATION.

At a meeting of the Royal Medical and Chirurgical Society, held in London, March 8, 1887, DR. WM. EWART and MR. R. FITZROY BENHAM read an account of a case of "Empyema with Pulmonary Gangrene following Enteric Fever treated by Perflation" (*Lancet*, March 12, 1887). The patient, a male, aged 10 years and 11 months, was seized with enteric fever (due, probably, to drain infection) on April 23, 1886. The symptoms were not unusual in character, but severe in degree, especially the delirium. The treatment adopted by Mr. Benham consisted of quinine, which proved ineffectual, and of antipyrin, which appeared to relieve the pyrexia and the delirium. The

patient was convalescing at the end of the fourth week, when peritonitis supervened, soon followed by left pleuritic pain. Within a week the signs of left empyema were fully developed, the exhaustion was extreme, and the dyspnoea bordered on asphyxia. On June 11 aspiration was made, and three-quarters of a pint of thick, shreddy pus removed, with relief of the most urgent symptoms. The following day the chest was opened freely in the anterior axillary line (fifth space), and in the scapular (ninth space), a large quantity of pus escaping. Free discharge continued, but no injection was used. On June 15 perfusion was performed under spray, in the manner depicted in the *Lancet* (July 31, 1886), the appliances being elastic tubing, a Wolfe's bottle containing carbolic acid solution (1 to 10), and a hand-ball bellows. The air was delivered into the centre of the chest through the anterior opening, and allowed to escape only at the posterior. The result was the expulsion of fetid pus, of a piece of necrosed lung, and of heavy false membranes. A smaller mass of membrane was expelled by perfusion the next morning, and a small piece on the third day. From this day the fetor ceased, and the amount of pus decreased rapidly. On the eighth day the discharge was turbid-serous, and it remained serous to the end. Both wounds were closed on the thirtieth day from the date of incision, and on the twenty-fourth from the first perfusion. Among the advantages obtained in this case by the method employed were the following: 1. Early removal from the chest of putrid residues. 2. Presumably considerable shortening of the period of suppuration as a result of 1. 3. Avoidance of permanent atelectasis and of eventual resection of ribs as a result of 2. 4. Avoidance of deformity as a result of 3. 5. Daily dressings, free from discomfort and from wet (excepting the spray). 6. A dryer state of the cavity and of its coverings than is allowed by fluid injections, with absolute sweetness of the discharge.

The PRESIDENT asked what was the advantage of perfusion over free incision at the most dependent part, with, if necessary, excision of the rib.

SIR DYCE DUCKWORTH believed the practice of washing out the pleura was a mischievous one. He would use perfusion in future in that class of cases where, having made a free opening with antiseptic precautions, the patient did not progress satisfactorily.

MR. GODLEE thought the case peculiar, in

that a piece of gangrenous lung was discharged without a history of previous fetid expectoration. He considered that a free opening posteriorly without perfusion would have met the needs of the case. Injecting the pleura was a mode of treatment now passing out of fashion. In cases requiring it he recommended blowing iodoform into the pleural cavity with an insufflator.

MR. BENNETT inquired what was the result of treatment in adults and in those cases which, previous to its use, had not done well. He could not recommend its adoption in general surgery, for in one case in which he perfused an abscess in the thigh he produced extensive subcutaneous emphysema.

MR. R. W. PARKER had published a paper in the Society's Transactions many years ago advocating a similar method to this. He had abandoned injection, and made a single large opening, into which a double drainage-tube was passed.

DR. DAWTREY DREWITT likened perfusion to the school-boy practice of "blowing" an egg, and pointed out the difficulty of separating the inner membrane from the shell by that method.

MR. HOWARD MARSH said he adopted the following method of evacuating an empyema: First make an opening high up; from this pass a catheter and feel the lowest part of the pleura; then make a large opening at this lower point, and allow the upper one to close. He believed washing out the cavity was not advisable, and, indeed, unnecessary. He objected to the insufflation of iodoform, which, he thought, might act as a poison. In excising a rib, if the periosteum were left, deformity would be avoided.

DR. SANSOM said the air would not be sufficiently purified by being blown through water. He advocated passing the warmed air over blotting-paper, cotton-wool, or sponge, saturated with pure carbolic acid.

MR. PEARCE GOULD thought the value of the method could scarcely be judged from one favorable case. He considered the best treatment was a single free opening in the sixth or seventh interspace and in the post-axillary line.

DR. EWART, in reply, agreed as to the value of a large opening. He believed perfusion useful in recent empyema to discover whether loose pieces were present. In older cases it might be beneficial by effecting the removal of an irritant. He had treated five cases of left-sided empyema, and perfusion in them had produced no effect on the heart.

In using this method in general surgery, care should be taken to have free openings, so as to avoid undue pressure.

THE ABSORPTION AND ASSIMILATION OF FOOD-STUFFS.

HOFMEISTER, of the German University of Prague, in a series of reports of work done in the Prague Institute of Pharmacology, writes as follows upon this subject :

Experiments upon animals which consume flesh have shown that a portion of their food is quickly assimilated through the agency of the mucous membrane of the intestine and stomach ; and that as factors chiefly concerned in this assimilation are the epithelium of the gastro-intestinal tract and the cellular connective tissue, rich in lymph-cells. Following up his histological studies, Hofmeister has sought to determine whether changes in relative nutrition are attended by morphological changes in the mucous membrane, and whether such changes may not throw light upon the structure and nature of the elements composing these mucous membranes. The free absorption of certain materials by cells renders, under favorable circumstances, the cells and their contents visible ; this occurs with glycogen and fat. This process may result either in a great enlargement of cell-volume or in greatly increasing the number of cells. In the first case, microscopic examination would afford a demonstration of the conditions present. The recognition of an increased number of cells can with certainty be early accomplished ; the caution should always be borne in mind to avoid confounding increased cell-formation of normal glandular elements with the development of elements introduced from without.

Change in the Number of Lymph-Cells in the Intestinal Mucous Membrane under the Influence of Nutrition.—The experiments reported were performed upon cats. Two animals of equal age, growth, and nutrition were chosen, one of which was fed liberally with meat, the other was starved for several days. When time had elapsed for the assimilation of the food taken, the animals were killed, and portions of the digestive tract were hardened in alcohol. Slides were made of sections prepared, and the pylorus, duodenum, middle and extremity of the small intestine, appendix vermiformis, and large intestine were examined. The intestines of a number of cats in various stages of fasting and repletion were

examined, pairs of animals and single ones being used for comparison, and osmic acid preparations were made. The result of these experiments was that fasting produced no effect upon the number of cells in the mucous membrane proper, while a manifest effect was readily observed upon the number of cells in the lymphatic connective tissue. This lymphatic tissue is much richer in cells in animals well fed than in those starving ; and further studies have shown that this condition does not depend upon a temporary repletion, but upon the general condition of the animal's nutrition.

Differences in the number of cells in the lymphatic tissue are readily recognized where well- and poorly-nourished animals are compared, especially if the latter be fasting. They are easily recognized and plainly discernible when animals of equally good general nutrition are compared, of which one is in full digestion, the other hungry. These differences are not, however, to be observed with certainty when a well-nourished, but fasting, animal is compared with a poorly-nourished animal which has recently been abundantly fed. It is then hard to determine which is the predominant element in the result,—the temporary digestive repletion or condition of generally good nutrition.

Nutritive changes in the digestive tract are not equally apparent in all portions of its extent. The influence of digestion during the period of absorption is most plainly seen in the stomach and upper portion of the small intestine, while the influence of a general condition of nutrition is equally marked in all portions of the intestine.

The appearances of different portions of the digestive tract are, briefly, as follows :

In the stomach the subglandular lymphatic connective tissue in hungry animals is much smaller and poorer in cells than in those in full digestion. The fibrous tissue, which forms the basement membrane of the lymphoid tissue, in animals in full digestion is often covered with cells ; in fasting animals it is plainly visible. The lymph-follicles in such animals are, when present, small, wasted, flattened against the mucous membrane, and the number of their cells greatly lessened ; the follicles of animals in digestion are wide, oval, or bullet-shaped, and distended with cells. The tissue about the follicles, in digesting animals, is also rich in cells, and the lymph-channels likewise.

Small Intestine.—The differences in the contents of the adenoid tissue in animals fasting

and digesting, which is greatest in the upper portion of the intestine, shows itself most plainly in the abundance or lack of cells in the parenchyma of the intestinal villi, the subvillous and interglandular tissue, and, to a less extent, in the subglandular connective tissue. In fully fed animals the villi are broader, the glands of Lieberkühn distended with cells, the subvillous spaces crowded with cells. In fasting animals the villi are shorter or smaller, poorer in cells; the glands lying closely together, the subvillous spaces appear trabeculated, containing few cells, and these appearances are the more marked the longer the condition of hunger exists; these conditions are most readily seen on the surface or by cross-section of the mucous membranes. In the duodenum the solitary lymph-follicles were prominent in only two animals, and as these animals were in full digestion, comparison with fasting animals was impossible.

In the jejunum and ileum the influence of nutrition was most manifest in the lymphatics of Peyer's patches. After abstinence of several days they are plainly visible. In well-nourished animals during digestion the follicles stand closely together, raised above the surface of the mucous membrane, and easily recognizable. In fasting animals they are sunk into the submucous tissue, scarcely recognizable above the mucous membrane. On removing the superjacent tissues, so that the under surface of a plaque is exposed, if the animal be in full digestion, a grayish, glistening tissue is seen, which, when punctured, extrudes an abundance of milky fluid, clear and rich in cells. In fasting animals the contracted follicles are separated from each other by a white boundary substance, so that the plaque has the appearance of a net-work. On perforating such a plaque a watery fluid which contains but few cells is procured with difficulty.

On microscopic examination it is found that the changes observed in fasting animals depend upon a marked diminution in the number of cells contained in the follicles. Each individual portion of the gland was small, collapsed, cell-infiltration failed, the spaces between the segments of the cells were wide and showed trabeculae of connective tissue; the villi shared also in this depletion. The glands of Lieberkühn were perpendicular to the surface of the mucous membrane, while in fully fed animals they are crowded one against another out of the perpendicular. The nutritive changes in the large intestine were like those of the small intestine; owing

to the smaller amount of lymphoid tissue present they occur less frequently. By prolonged fasting it is difficult to recognize a diminution in lymph-cells, especially in the follicles of the appendix vermiformis. The fact of the increase in the number of cells in the adenoid tissue of the intestines may be explained upon two hypotheses,—that of the extravasation of leucocytes from the vessels during increased circulation; the segmentation of living protoplasm in the cells of the tissues.

If the first hypothesis were true, the largest number of cells would be found near the blood-vessels; this, however, is not the case. Further, the lymph cells within and without the blood-vessels should have the same structure if they are the result of extravasation; the cells contained in the capillaries and small vessels are multinuclear; while it is rare to find cells in the adenoid tissue of the intestine which are not uninuclear. It is possible also that the multinuclear cells did not escape from the blood as such, but that they were originally extravasated and formed as uninuclear cells.

Flemming has demonstrated the generation by proliferation of lymph-cells in the plaques of Peyer and in the large intestine; Hofmeister has observed the same phenomenon,—has counted as many as seventy cells in a single section, and so distributed that it is doubtful if a "centre of generation" was present. The single follicles of the stomach and small intestine showed the same germination, and confirmed the improbability of the existence of centres of generation; the lymph-channels were also filled with cells. The presence of such numbers of cells in those portions of the intestine which contain the follicles must depend either upon the accession of a great number from without, or the proliferation of cells independently of the follicles. It is highly improbable that these numbers of cells have been extravasated from blood-vessels or from the follicles, although the vicinity of Peyer's patches is always rich in cells: the facts indicate that in the mucous membrane of the intestine cells proliferate abundantly outside of the follicles, as the following observations show:

To avoid errors, safranin, gentian, or hæmatoxylin should be used as stains; care should be taken in sections cut obliquely through Peyer's plaques when it is difficult to distinguish free lymph-cells from those of the neighboring glands.

It is probable that nuclei of mother-cells

divide and separate themselves from the original protoplasm, forming in the process figures of various kinds observed in the crypts of the interglandular tissues. The fact that this process less often results in wandering lymph-cells leads to caution in their recognition outside of the follicles. It is, however, possible in thin sections to recognize clearly a large number of germinating cells in the lymphoid tissue wherever cell-infiltration is most pronounced. In the stomachs of well-nourished cats extra-follicular lymph-cells were found between and beneath the glands: the number was greatest near the pylorus. In the small intestine cells were found in the parenchyma of the villi and in the subvillous and interglandular tissue, but so poorly developed in the subglandular tissue as to be scarcely noticeable. They were found most frequently in the periphery of the connective tissue about the villi. The fact that karyokinesis occurs in the adenoid connective tissue of the intestine makes it unnecessary to suppose that the new cells so formed have their origin outside the intestine. The experiments narrated were repeated upon dogs, which showed a greater inter- and subglandular infiltration than in cats.

The conclusion reached by these experiments was that the autochthonous cell-development of the adenoid connective tissue of the intestines is greater than that of any other portion of the body.

The foregoing observations, however, point to this cell-proliferation as one of the assimilative functions of the intestine. They also prove that the process described is a proliferation of cells independent of lymphatics, as is shown by the difference in essential characteristics between the cells of the glands and the lymphoid cells. The writer has seen such cells in pure fibrillated connective tissue, in interglandular lymph-spaces, and mixed with blood-corpuscles in the capillaries at the bases of the villi. These lymph-cells are independent in their growth of all surroundings except their nourishing medium. Remembering that the tissues of the digestive tract draw their nutriment directly from the products of assimilation, the karyokinesis of lymph-cells appears as the morphological result of a series of chemical and assimilative processes, which culminates in the new organization of the cell. This conclusion is verified by the fact that these cells are present in great numbers among the epithelium of Lieberkühn's crypts; they are less abundant in the stomach, and still less abundant in the large

intestine. Whether imputed to development for a specific object in the economy, or as a result of physiological processes, it is not difficult to understand.

The epithelia of the absorbing portion of the intestine are best situated for the consumption of its contents; in the second place are the lymph-cells of the adenoid tissue.

It is not alone in the intestines that lymph-cells assimilate nutritious matter; the mesentery and its lymph-follicles furnish a multitude of dépôts where such activities go on. The intestine and mesentery together may be considered one large tubular lymphatic gland, the various parts of which have essentially the same function.

Flemming has shown that the mesentery absorbs nutrient matter and proliferates cells. The fact that lymph passes through chains of glands before reaching the blood explains the apparent riddle that absorbed material is found in the blood which is not present in the thoracic duct; each gland is capable of absorption and direct assimilation and transference to the blood.

The exact way in which this mesentery and intestinal gland apparatus performs its function we do not know; that it has an important bearing on the nourishment of the individual we cannot doubt.

The experiments just described show that the increase in lymph-cells is independent of the glands themselves, but is an assimilative function of the intestine; these leucocytes have been found in the trabeculae of connective tissue, and mixed with white and red blood-corpuscles at the capillaries in the bases of the villi. These cells depend for their growth and nutrition, not upon the neighboring tissues, but upon the fluid or serum which circulates about them.

Inasmuch as the cells in question take no part in the composition of the blood and lymph, it is evident that these fluids contain in but small degree those elements upon which karyokinesis depends. When we consider that the difference between the interstitial lymph of the connective tissue of the digestive mucous tract and the fluid of the lacteals consists in the most recent products of digestion, and that the number of cells in the intestine sustains a relation to nutrition not fully determined, we are led to the conclusion that not only the increase in the number of nuclei and amount of cell-substance, but also karyokinesis itself, are direct products of digestion. Karyokinesis of lymph-cells appears, then, from this stand-point to be the

morphological and discernible result of a series of chemical and assimilative processes. The final act of this assimilation is the new organization of the cell.

With the above an observation already noted fully agrees. The lymph-cells which have been described are most abundant at Peyer's plaques, less frequently found in the gastric submucosa, and rarely present in considerable numbers in the tissues of the large intestine. The writer has repeated the work of Heidenhain, and found that the great increase in the lymph, whether existing for a definite end or as the result of a physiological plethora, is easily explained by reference to the condition of nutrition. The epithelia of the absorbing portion of the intestinal tract are most favorably situated for absorbing nutrient matter; next after them are the lymph-cells of the adenoid connective tissue.

The adenoid connective tissue is only, however, the first halting-place at which lymph-channels come into relationship with nutrient material. That which is not appropriated follows the lymph-currents to the mesenteric glands. These bodies are so situated as to intercept the lymph which passes from the intestines to the thoracic duct. In suckling animals, along the bases of the mesentery the lymph-channels converge in such a manner that it is evident that a special mechanism is here constructed for the reception of nutrient matter, both finely divided and dissolved. The lymphoid connective tissue and the mesenteric glands seem to be portions of the same apparatus, having the same function.

Flemming has already shown that an abundant proliferation of cells occurs in the mesenteric glands. It is not, however, possible to carry out the analogy with the lymphoid tissue of the intestine, and show that *pari passu* with cell-proliferation nutritious matter disappears. It is evident that the lymph-channels afford greater obstacles to the general diffusion of nutritious matter than do the blood-vessels, non-diffusible fat, for example, passing through the lymph-channels, and it is somewhat enigmatical that certain products of digestion, as peptone, are often found in the blood and never in the chyle of the thoracic duct.

When we consider, however, that products of digestion must pass through a chain of lymph-glands, which retain such matter, and apply it to the production of new cells, these phenomena are more intelligible. In the light of such investigations, the great lymph apparatus of the intestine and peritoneum

seems to be especially adapted for the most useful and economical assignment of nutritious matter, acting, as it does, as an intra-cellular transport. The precise method of this action we do not, as yet, know. Its importance to the bodily economy may be inferred when we consider the value, in the body, of the numberless cells contained in the intestines and their glands.

Regarding the function of the peripheral lymph-glands there are two theories worthy of attention. One of these theories depends upon the facts observed regarding the dependence of the numbers of cells upon digestion and nutrition. We should then ask whether, inasmuch as the nutritive changes in the adenoid connective tissue coincide closely with the period of digestion, this cell-proliferation is to be regarded as the result of the increment of nutritious matter? Should not the full development of nutritive processes result in a much more widely-spread diminution in the number of cells than we have just observed? A closer observation shows the proposed coincidence between digestion and cell-growth when it arose from introduction of lymph-cells from without, or the extravasation of leucocytes from the blood. Lymph-cells are plainly formed in the place and situation where nutrition goes on, but no such coincidence as that mentioned can occur, for the reason that cell-proliferation and karyokinesis persists for hours after absorption of nutritious matter. In this wise also it happens that the mucous membrane of the intestines for days after the last ingestion of food contains unassimilated matter in small quantities, and is thus in a position to continue proliferation. It is not surprising that, after an abstinence of a day or two, the contents of the adenoid connective tissue are only partially depleted of lymph-cells. With the disappearance of ingested nutritive matter from the intestine the assimilation and absorption of nutritive matter does not cease, but it happens, to make use of a comparison, material brought fit for the mint is coined and put into circulation again and again. It is evident that such an arrangement provides for the nutrition of the tissues in the pauses in the reception of nutrient matter. To ascertain to what extent abstinence influences cell-proliferation the experiment was made of subjecting an animal to hunger for fourteen days; there results a general lessening in the number of lymphoid cells, but even an abstinence of seventeen days, producing inanition, did not entirely remove them. Through still longer

continued hunger the mucous membrane of the intestine lost an amount of cell elements, which reduced the volume of the villi and glands to two-thirds, and lessened the circumference of the bowel. The infiltration with lymph-cells sustained a considerable loss, which fell more upon stationary lymph-cells than upon those merely formed in the connective tissue. The actual loss in the constituents of the follicles was a relative one and not absolute; it was seen in cross-sections of the tissues, and also in counting the cells extruded in the fluid from the follicles. The atrophy of the follicles may be so great that, in comparison with the newly-formed lymph-cells, the cells of the follicles may disappear entirely, and even the cells remaining may show a diminished circumference and a smaller amount of coloring element. The statement that the formation of lymph-cells does not depend entirely upon nutrition leads to the following considerations: if the adenoid connective tissue, including the peritoneal glands, receives a portion of the nutritious matter, what portion should be allowed that numerous lymphatic array, which, like the peripheral lymph-glands, are not enriched by nutrient matter in the intestinal lymph? The answer to this question is in full accord with what has been said. It can happen that a portion of digested matter enters the blood and disappears first in the capillaries of various organs. If the quantity of peptone resulting from digestion is too great for ready assimilation, or the adenoid connective tissues already overstocked, a portion of the peptone may enter the venous circulation unchanged, and be sent from the heart through the organism; it can also happen that the tissues may transfer non-assimilated peptones to the efferent lymphatics, and this peptone, on its way to the general circulation, may be intercepted by lymphatic glands, where it is retained and assimilated, as happens in the intestinal and mesenteric glands.

What has been said of peptone absorbed in the intestine is true of other substances which behave similarly.

In accordance with the great diversity in the arrangement of the tissues, as well as by their functional differences, it will scarcely be credited, as that which is half unknown so often happens, that from the waste of active cells, as well as excrementitious matter from the blood, the chemical changes follow after the same rules, and invariably bring it to pass that at the location and place of the cell are produced the final products of cell-activity,

—carbonic acid, urea, and water. There are also many intermediate products of decomposition in greater or lesser amounts, which if not wanted at one portion of the body may be useful at another. Schmiedeberg, Bunge, Waldemar von Schröder, Mirkoraski, and Max von Frey have shown that the transition of these substances into excreta does not always occur in the same amounts, but more often at certain regions of the body which seem designed for this purpose. The products of decomposition, when they find no acceptance where they were produced, enter the stream and reach the lymphatic glands, and there undergo a process which renders them fit for the production of new cells. What is not accomplished at the lymphatic stations takes place in the blood, and at every station where an excretory product is developed. From this stand-point there is no necessity for the peripheral lymphatics to differ in function from the mesenteric; their function is different only in this, that they do not draw from the contents of the intestine, but gain their nourishment from the excess and overflow of other organs. During prolonged periods of digestion quantitative experiments may be done in part. The lymph apparatus of the intestines during hunger takes its nutrition from the residue of the intestinal wall, and is in this degree comparable to a normally-acting peripheral lymph-gland.

It is, therefore, not remarkable when the new formation of lymph-cells does not entirely cease in these lymphatics; and hence there is room for doubt whether the passage of nutrient material from the intestine is ever absolutely in suspense during hunger, although it may sustain a great reduction.

Many anatomical and pathological facts indicate that many lymph-glands always or occasionally assume important but different functions. Especially interesting is the development of adenoid connective tissue in mucous membranes not designed for absorption; the explanation of these facts demands further investigation.—*Archiv für Experimentelle Pathologie*, February 8, 1887.

INDICATIONS FOR THE USE OF NITRO-GLYCERIN.

DR. TRUSSEWITSCH, in an instructive paper on the use of nitro-glycerin published in the *St. Petersburger Medicinische Wochenschrift*, points out that the value of this drug in various affections—angina pectoris, migraine, and neuralgia (which he describes as angio-

neuroses), as also in sea-sickness, some forms of anæmia, faintness, palpitation, and other diseases—depends upon the existence of an irregular distribution of blood, which condition may be inferred from a certain degree of pallor of the skin, especially of the face, often coexistent with a weak pulse and a small rigid radial artery, which frequently is situated at some depth. When, on the other hand, headache and neuralgia occur in patients with chronic congestion of the subcutaneous veins of the face, nitro-glycerin is to be avoided; and similarly it is of no use in asthma, when the face is reddened in consequence of emphysema. If, however, a pale face exists with angina pectoris, migraine, giddiness, shock, toothache, or sea-sickness, the best results may be looked for by giving nitro-glycerin. The regulating effect of the drug exercises an influence over the congestion of internal organs similar to that brought about by blood-letting; and in these congestions, whether of lung, brain, or kidney, when they are of a temporary character, the pulse is generally found to be slow and of low tension,—a fact which, as the author remarks, is sufficiently well known in reference to the fever-free periods of acute hyperæmia of the lung and kidney. Dr. Trussewitsch lays down as a rule that the condition of the pulse is the best indication for the employment of nitro-glycerin, and the most trustworthy guide as to the dose with which to commence the treatment. The smaller the radial artery is, the more rapidly it dilates under the action of the drug, and the less the secondary effects proceed; on the other hand, the fuller the pulse with a distended radial artery, the less it is affected; and, finally, the softer the artery with a weak pulse, the greater the secondary and the less the general effects. Single-drop doses of the one per cent. solution are sufficient in cases of small pulse, but with a full pulse it will be found that the full effects cannot be produced with less than 2-drop doses. When there is a soft artery with a weak pulse, sub-normal doses only should be given,—a quarter to half a drop. After the trial dose is given, the patient's sensations of pulsation and pain in the head, as well as the distention of the radial artery under the finger of the physician, will be the guides for increasing the dose. The author finds that the best modes of administering nitro-glycerin are the simple dropping of the solution on the tongue and by means of tablets; much less satisfactory results were obtained when given mixed with water.—*Lancet*, February 19, 1887.

TESTS FOR ANTIFEBRIN.

Yvon has employed the following tests: Good specimens of antifebrin must be white or pale yellow in color and odorless. To detect the presence of a trace of unchanged aniline, which is poisonous in its effects, a little antifebrin is rubbed up with water, and sodium hydrobromide added. If the specimen is pure, the fluid remains clear and yellowish in color. If aniline is present, an abundant, reddish-orange precipitate is formed, and the supernatant fluid has a like color.

A reaction, which proves the identity of antifebrin, consists in heating it with mercuronitrate, when a green coloring-matter forms, soluble in alcohol. The same reaction may be applied to the examination of urine by shaking the urine with chloroform, and heating the solid residue with mercuronitrate. This test shows even traces of antifebrin.—*Pharmaceutische Zeitung*, March, 1887.

THE PROGNOSIS IN CASES OF HEART-DISEASE.

In the *British Medical Journal* for February 12 and 19, 1887, SIR ANDREW CLARK reports a long series of cases of valvular diseases of the heart known to have existed over five years without causing serious symptoms, from a study of which he draws the following conclusions:

"1. That there are many persons with long-standing valvular disease of the heart, engaged in the active business of life, who without any symptom of heart-disorder have enjoyed good health and have reached an advanced age.

"2. That the mitral regurgitant murmurs so often encountered in chorea, for the most part disappear within eight or nine years of the attack.

"3. That valvular inflammations, and their effects arising in the course of rheumatic fever, do sometimes disappear, and leave behind no clinical evidence of their former existence; and that this occurring for the most part in the young, also occurs sometimes in the middle-aged.

"4. That the signs of valvular defects arising out of the degenerative changes of middle life do also, on rare occasions, disappear, and that, when circulatory and respiratory disturbances accompany their commencement, they sometimes subside, and permit of apparently complete readjustment.

"5. That as there must be in the histories, habits, occupations, and surroundings of patients with valvular disease conditions

which in one case bring about secondary disorders, and in another case exempt it from them, it is desirable that the respective *differentiæ* should be discovered and made capable of application to practice.

"6. That any systematic and critical study of this subject likely to lead to practical issues could be undertaken only by the Collective Investigation Committee, and not by it unless actively assisted by experienced general practitioners who possess, in a special manner, the knowledge necessary to the end in view.

"7. That a joint inquiry of the kind proposed, conducted with due patience, discrimination, and accuracy, would greatly extend our knowledge of the natural history of diseases of the heart, and largely increase our means of assisting those who suffer from them."

IODIDE OF SODIUM.

Iodide of sodium is considered by DR. RICHARDSON as a valuable substitute for, or adjunct to, iodide of potassium. In chronic eczema and painful rheumatic affections it often answers well when iodide of potassium does not agree with the digestion. Combined with arsenic it is useful in lepra and psoriasis. Externally applied, in cases of indolent ulcer, chronic syphilitic sores, and offensive discharges from the nostrils, it acts as a good antiseptic. The following is given as a useful formula for the purpose: Sodium iodide, ʒss; tincture of myrrh, ʒi; rectified spirit, ʒii; distilled water, ʒvi. To make a solution of eight ounces. Used in the form of fine spray from Seigle's steam spray-inhaler, Dr. Richardson found it of the greatest service in a case of syphilitic ulceration of the fauces.—*The Provincial Medical Journal*, March 1, 1887.

SPARTEINE.

DR. GLUZINISKI, in a preliminary note published in the *Przegląd Lekarski*, gives the results of some observations, both physiological and clinical, on the action of sulphate of sparteine. Its main action is to slow the heart; besides this, it raises the blood pressure. On cold-blooded animals it acts with a greater degree of intensity than on mammalia. The action on mammalia may be divided into three periods or stages, during the first and last of which the effects are more marked than during the second. Indeed, in some cases the heart is even quickened during the second period. This may be explained by

the existence of some abnormality or pathological change in the irritability of the vagus or of the heart-muscle. The reflexes are at first increased, afterwards diminished. Death occurs from asphyxia, and is due not only to the effect on the medulla, but to that experienced by the respiratory muscles. The therapeutic use of sparteine is limited to the first stage of its action. Its value consists in the rapidity with which it acts. In some cases, within an hour after the first dose, the pulse begins to improve, as well as the subjective sensations of the patient, and no irregularity is produced. Sparteine has not so powerful an action as digitalis. It may, however, be useful in cases where the condition of the patient renders it inadvisable to wait for the more tardy effect of digitalis, and it may therefore be used as an adjunct to the latter drug, besides which it may be prescribed where circumstances exist which contraindicate the use of digitalis.—*Lancet*, February 19, 1887.

SUCCESSFUL TREATMENT OF HYPERPI- REXIA IN ACUTE RHEUMATISM BY THE COLD BATH.

At a meeting of the Clinical Society of London, held February 25, 1887, DR. CARRINGTON read a paper on the above subject. He said that although there was nothing new in the case he brought forward, still he thought it was well to put such cases on record, in order to accumulate a body of evidence such as would enable medical men to combat the prejudice existing among the friends of patients against the employment of a remedy which afforded the only chance of safety in this desperate complication. The patient was a medical student aged 23, strong and muscular, and hitherto in perfect health. He had been ill with what was apparently a mild attack of rheumatism, for which he had been treated by salicylic acid. He was so far recovered that he had left his bed, and on the evening of October 31 had received the visits of his friends. He passed a good night, and there was nothing to excite attention next day; but on taking his temperature next morning about twelve, noon, quite as a matter of routine, it was found to be 107° F. Dr. Carrington saw him soon afterwards, and then found the temperature to be 106°. He was, as soon as practicable, removed to the private ward of Guy's Hospital, but during the journey had become noisy and delirious, and by the time he had been placed in bed

he was quite livid, unconscious, and generally convulsed. His temperature was then found to be 109.8° . The necessary arrangements had been previously made, and he was at once placed in a bath at a temperature of 70° , which was as rapidly as possible cooled down by ice. Large quantities were used, but the body heat was so great that there was great difficulty in lowering the temperature of the bath. Pouring ice-cold water on the patient's head had a beneficial effect. A rectal injection of 15 grains of antipyrin was administered. He was kept in the bath for a full hour, and when the rectal temperature was 102.4° he was removed and placed on a blanket, and lightly covered by a sheet. Then marked tetanic convulsions supervened, and he gradually became quiet, and at 7 P.M. his temperature fell to 97.2° . At 8 P.M. consciousness returned, and he took a pint of milk, and at 10 P.M. he was quite rational. During the next day he remained comfortable, and took gr. xx of salicylate of sodium every two hours, but his temperature again rose, and at 12 P.M. it was 103.8° . He was given gr. xv of antipyrin by the mouth, but at 2 A.M. the temperature was 105.2° , and the ice-bath was again employed for fifteen minutes. He was taken out when his temperature had fallen to 101° , but at 6 A.M. it had again risen to 105.4° , and the bath was again had recourse to for a similar period. After this he slept well, but at 2 P.M. the temperature had reached 105° , and he was bathed again for forty minutes. From this time the temperature never again rose to any extent; it was for the most part normal, but on one occasion, with a return of the articular pain, it reached 101° . After the third bath, salicin was substituted for sodic salicylate, in 25-grain doses every two hours. After two days he took it every three hours, and the dose was gradually reduced. With an interruption due to the slight relapse, the patient made an uninterrupted recovery, from this time, and left the hospital quite well. The experience of the case seemed to be that within the limits of collapse prolonged immersion was more effectual than shorter and more frequent baths.

DR. HALE WHITE said that the failure of salicylate of sodium and antipyrin was of interest, as leading us to see in some manner the way in which those drugs acted. In rheumatic pyrexia, at any rate, they were not of value. It was possible that it would by and by be discovered that each drug was applicable to a particular class of cases.

The PRESIDENT said that he had not seen convulsions occur during the rise of temperature. He had seen them come on during the cold bath in a case which ultimately proved fatal, and he had seen hyperpyrexia supervene during the use of salicylate of sodium.

DR. HUGHLINGS JACKSON wished to know the exact nature of the convulsions, and particularly whether they were tonic or clonic, or both.

DR. STEPHEN MACKENZIE said he had had three or four cases of hyperpyrexia in private practice, and could endorse the remarks as to the difficulty of the cold-water treatment in private practice. He had succeeded in reducing the temperature to normal, but they had all terminated fatally. Those cases required the most careful supervision. The convulsions were invariably tonic.

The PRESIDENT said the convulsions took the form of opisthotonos, without clonic convulsions.

DR. CARRINGTON said in reply that the convulsions came on after the patient had been removed from the bath. The first bath lasted a good hour, as a great difficulty was experienced in reducing the temperature of the bath. He thought the antipyrin did more harm than good by favoring collapse. The salicylate did not appear to have had much effect either way. He thought antipyrin was a dangerous drug.—*British Medical Journal*, March 5, 1887.

THE PHYSIOLOGICAL ACTION OF SPIGELIA, OR PINKROOT.

Although spigelia has been frequently studied from a clinical point its physiological action has received no attention, and we reproduce, therefore, almost in full the studies made on this subject by DR. H. A. HARE, and published in the *Medical News* for March 12, 1887.

When as much as three ounces of the fluid extract of spigelia is given by the stomach to a large dog weighing forty pounds, the following symptoms appear: Almost immediately after the ingestion of the dose the animal has short and quick expiratory movements, amounting almost to a cough; soon after the pupils become widely dilated, and at the same time very marked internal strabismus asserts itself; the eyes becoming fixed in this position so that they cannot follow any object, such as a pencil, when it is passed from side to side. Constant retching, with no result,

now comes on, the animal standing, and apparently suffering from no sensory or motor palsy. There is no change in gait. Soon after this marked exophthalmia develops itself. The retching having lasted about five minutes, now passes off, and at this time signs of muscular weakness and lack of co-ordination appear; the walk becomes staggering in both fore and hind legs. The respirations now become very rapid, resembling those of a dog after a long, hot run, the tongue hangs from the mouth and is dry and red, and the nose is hot and no longer moist. Muscular power is progressively lost, so that the dog frequently falls when endeavoring to walk, but sensation does not seem to be affected. About this period the animal lies down and passes into deep sleep, which in turn soon passes into coma, and death follows without any movement being made, evidently from a general failure of vital force. The respirations as death approaches become slow, and are finally extinguished consentaneously with cardiac arrest.

In the frog the same symptoms occur as in the higher animal, including the marked exophthalmia and to a less degree the strabismus. The fixation of the eyeball is extreme, and it feels to the finger like a hard knob, which the lid cannot cover. Muscular weakness with dropping of the jaw comes on, and motor power is constantly decreased, until the batrachian lies relaxed and powerless. That the action of the drug in thus destroying motor power is spinal was proved by the following experiments: If the hind legs are protected from the poison by ligation of the abdominal aorta, the palsy is as great as under ordinary circumstances, and reflexes are totally abolished. Further, if the spinal cord be directly galvanized no movements occur in the hind legs; and, lastly, if strychnine be injected into the body, even in large amount, its action is not only slight, but occurs after the lapse of many minutes. That the drug has no action on the motor nerves is proved by the fact that when the poison reaches the efferent nerves, either through the circulation or when directly applied, galvanization of the nerve-trunks causes normal contractions in the tributary muscles, and the sensory nerves likewise escape, for if the drug be applied directly to the nerve and the foot irritated, signs of pain are elicited, and reflex movements occur. Further than this, if the vein in the leg be tied and the drug injected into the limb, thus protecting the spinal cord, reflexes occur on irritation of the drugged foot.

That the palsy is not cerebral is proved by the fact that movements of muscles supplied by the cranial nerves continue long after the movements in the legs have ceased, and by the other experiments already detailed.

The action of the drug on the circulation is as marked as its effects on the nervous system, and on the cardiac muscle it acts as a direct depressant poison, for if it be injected into the jugular vein in such a way as to come suddenly in direct contact with the heart the movements of that viscus almost instantly cease. Further than this, if the excised heart of the frog is dropped into a strong solution of the drug its movements are almost immediately stopped in a condition of diastolic arrest, although the relaxation is not very marked. When a frog receives as much as twenty minims of the extract of *spigelia* the heart is slowed to a considerable extent, as much as ten or fifteen beats per minute, and diastole, while not increased in length, is nevertheless very full and marked. The change from systole to diastole is abnormally rapid, so that the heart in one moment in systole springs with a quick movement to its full diastolic condition. Systole, however, gradually increases on diastole, in much the same manner as in *digitalis*-poisoning, until finally the greater portion of the ventricle fails to dilate, the apex being tilted more and more forward while the ventricular walls are powerfully contracted. As the systolic pauses increase, the diastolic movements decrease in volume, until finally the heart dilates no more than it does normally. At this time the powerful and heretofore spreading systolic contractions seem to lose power and the heart shortly stops all movement in a semi-relaxed state. Experiments on the warm-blooded animal show that on the injection of one drachm, or less, of the drug the action of the heart is very rapidly slowed in its movements, and that this slowing is chiefly due to central inhibitory stimulation is shown by the fact that if the vagi be cut before the drug is given this slowing does not occur, and also if after the drug has slowed the heart the vagi be cut the inhibition no longer remains.

That the fall of arterial pressure produced by this drug is due in great part to the cardiac depression which it produces is proved, since asphyxia will cause a rise in pressure, and that the pressure returns nearly to normal as soon as the heart gets rid of the drug which has been suddenly injected into it. On the respiratory centre the drug seems to have a still more depressing influence,

respiration ceasing some moments before the cardiac arrest.

EUCALYPTOL IN PHTHISIS.

BOUVERET has employed hypodermic injections of eucalyptol in the treatment of phthisis. The daily dose of the antiseptic has varied from $1\frac{1}{2}$ grammes to $2\frac{1}{2}$ grammes. The duration of the treatment has been from fourteen to sixteen days. Sixteen cases of phthisis were treated by this method; six of the number had fever, and the remaining ten were without fever. There was rarely any local disturbance at the site of injection. It was certain that the antiseptic was absorbed; it could be detected in the breath, but not in the urine. Albuminuria was not observed as the result of the treatment. It is very doubtful whether the number of bacilli was altered in any way by the method of treatment. Sweating, as a rule, was diminished. Its chief effect is as a balsamic preparation on the bronchial secretion, which it influences favorably. MM. Perret and Chabbannes have made experiments with the five per cent. solution of eucalyptol, injecting a mixture of it with tuberculous matter under the skin of guinea-pigs. The general conclusion at which they have arrived is to the effect that the antiseptic is utterly insufficient to prevent the activity of the micro-organism that causes artificial tuberculosis.—*Lancet*, February 19, 1887.

DERMATITIS VENENATA CAUSED BY LEUCANTHEMUM VULGARE.

Leucanthemum vulgare is the name of one of our common plants which is known in different localities as white-weed, or field daisy, and is plentiful in New England and the Middle Atlantic States and is spreading rapidly over the entire country.

In the *Boston Medical and Surgical Journal* for March 10, 1887, Dr. James S. Howe calls attention to the fact that this plant is capable of producing in certain persons a marked inflammation of the skin closely similar to that produced by rhus, dogwood, and sumach, and he thinks it is possible that many cases which have been attributed to these latter plants may perhaps have been produced by the field daisy. He reports four cases, himself among the number, in which severe dermatitis was produced.

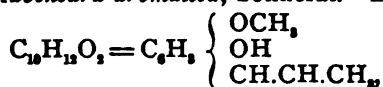
THE SIGNIFICANCE OF THE RETENTION OF THE MEMBRANES AFTER LABOR.

The importance to be attached to the retention in the uterus of portions of membrane after the completion of the third stage of labor has been variously estimated by different obstetricians, some—e.g., Winkel, Dorn, Ahlfeld, and Graefe—holding that grave dangers are to be apprehended when this occurs, while others—as Alshausen, Credé, Fischer, and Cohn (who has reported two cases in which nearly the whole membrane had been retained for five days without causing any pyrexia)—believe that little or no danger of hemorrhage, septicæmia, or other puerperal mischief is caused by the retention of even considerable portions of the membrane. An explanation of this divergence of view has recently been attempted by Professor Lazarevich in the opening article of the new Russian *Obstetrical and Gynecological Journal*. His explanation is founded on the fact, unrecognized by most obstetricians, that "the membranes," even at the full term, are composed of and more or less separable into three distinct layers, representing the chorion, the decidua, and the amnion. The strength of these has been investigated by Poppel, Duncan, and Ribemont, and the amnion shown by them to be much tougher than the chorion in conjunction with the decidua. Professor Lazarevich has also made a number of researches on the subject by means of an apparatus consisting of two rings covered with india-rubber, between which the membrane to be examined was stretched, the resisting force being estimated by means of a wooden hemisphere on which weights were placed, which the membrane was made to support, more weights being added until it gave way. These observations showed that the integrity of the ovum depends almost entirely on the amnion. During labor some separation of the membranes from one another usually occurs; and this is especially the case when the chorion, split or torn below, maintains a close connection with the decidua, and the decidua with the uterine wall. The progress of the labor also separates the amnion from the chorion. Roemer explains the separation of the membranes from one another by their unequal elasticity; and Professor Lazarevich believes that the chorion, being less elastic as well as more easily torn than the amnion, is frequently ruptured in several different places, some portions coming away attached to the amnion, and some being left behind, attached to the uterus. The causes of retention of the chorion

with the decidua are,—1, the presence of villi on the chorion; 2, extravasation of blood on the decidua, with consequent formation of fibrous adhesions; and, 3, adhesions in consequence of endometritis and choriitis. The amnion may be retained in consequence of,—1, occasionally occurring adhesions between it and the chorion and decidua; 2, early rupture and escape of all or part of the liquor amnii; 3, a low attachment of the placenta or placenta prævia; 4, intra-uterine manipulation; 5, anteversion of the uterus after the birth of the child; 6, exceptional weakness or thinness of the amnion. Retention of the decidua (which is formed from the uterine mucous membrane, not from the ovum) is, as a rule, of little moment, though it is perfectly possible for endometritis decidualis to occur, and for the retained portions of the decidua to serve for the development of micro-organisms introduced from without. Shreds of the chorion, if retained either by themselves or together with the decidua, do little harm, as they rapidly undergo chemical and mechanical destruction, and are carried away with the lochia. The amnion, when retained, is much more liable to become the developing ground for bacteria, and it is to the retention of this part of the membranes that alarming symptoms are usually due. Professor Lazarevich lays considerable stress on the importance of straightening or replacing the uterus in its proper position after the birth of the child, before the after-birth comes away.—*The Lancet*, March 12, 1887.

EUGENOL AS AN ANTISEPTIC.

According to GEO. H. OCHSE, Ph.G., eugenol, the principal component of oil of cloves, is found also in *Myrtus pimenta* (*Pimenta officinalis*, Lindley), *Amomis acris*, Berg (*Myrcia acris*, DeCandolle), *Canella alba*, Murray, *Dicypellium caryophyllatum*, Nees, and in *Ravensara aromatica*, Sonnerat. Eugenol,



a phenol-like compound, is insoluble in glycerin and water, and is obtained as residue when oil of cloves is subjected to distillation with strong caustic alkalies. After the so-called light oil of cloves is distilled off, sulphuric or phosphoric acid is added, and by continuing the distillation without access of air eugenol is obtained. Eugenol is an oily, colorless liquid, possessing the odor and taste of oil of cloves in the highest degree. In contact with air

and light it soon acquires a brown color; it boils at 247.5°C ., and has a specific gravity of 1.078 at 0° and 1.063 at 18.5°C . Like phenol, which it resembles very much, it has no acid reaction, does not contain the group COOH , and also forms crystallizable compounds with alkalies. When heated with hydriodic acid it evolves methyl-iodide, and when fused with potassium hydrate it forms protocatechuic acid, $\text{C}_6\text{H}_3(\text{OH})_2\text{COOH}$; with baryta and tin-dust it forms about ten per cent. methyl-eugenol. When taken internally the greater part of it is eliminated by the urine, in which, however, it cannot be detected by its odor nor by distillation, but, if allowed to decompose, the characteristic odor is at once perceptible, and when extracted with alcohol shows the characteristic deep-green coloration with ferric chloride. Eugenol has been given in doses of 3 grammes per day dissolved in alcohol and diluted with water. As an antiseptic, it is superior to phenol; as a febrifuge, it is not as efficacious as quinine, salicylic acid, antipyrin, or thalline.—*American Journal of Pharmacy*, March, 1887.

PNEUMOTOMY IN PULMONARY ABSCESS.

DR. RUNEBERG, Professor of Medicine at Helsingfors, in a clinical lecture which has been published in a Swedish journal published in Finland, gives an account of a case of pulmonary abscess consequent on acute pneumonia, where he had performed pneumotomy with success. In addition to this he had collected notes of ten other cases. Leaving aside three of the eleven on account of uncertainty in the diagnosis, five of the remaining eight recovered, or, at all events, improved very decidedly, and in the rest, which were fatal, death could not in any way be attributed to the operation; so that Dr. Runeberg considers that when the diagnosis of pulmonary abscess is clear, and it is in an accessible situation, the best practice is certainly to open it. He then refers to the question of operating for gangrene of the lung. He himself had had a case of this, together with bronchitis and bronchiectasis. After the operation secondary gangrene and septicæmia occurred, which proved fatal. In seventeen other cases of gangrene he quotes from medical literature where pneumotomy was performed, seven recovered more or less completely, and the fatal termination of the remaining ten did not appear to have been attributable to the surgical interference. As

to the method of opening the lung, Dr. Runeberg is in favor of resecting a rib, and then using the thermo-cautery. He does not approve of washing out the cavity with antiseptic lotions, thinking them dangerous, and believing that ample drainage is sufficient. In conclusion, he mentions several pneumotomy cases he had collected: two were for ecchinococcus, both terminating favorably; six were for bronchiectasic cavities with gangrene; and six for tubercular cavities. In the latter two classes of cases he does not think operative procedures are advisable.—*The Lancet*, February 12, 1887.

FERMENTS IN MILK-JUICES.

A. HANSEN has examined the latex of different species of plants for the presence of ferments. He finds none in the Euphorbiaceæ, in *Ficus elastica*, *Scorzonera*, *Taraxacum*, or the juice of the opium poppy. The latex of *Ficus carica*, on the other hand, contains principles capable of effecting four fermentative changes; they peptonize albuminoids in the presence of either alkalies or acids, act like diastase on starch, and coagulate the casein of milk. Twenty to one hundred grammes of fibrin, previously caused to swell by immersion in hydrochloric acid of 0.2 per cent. strength, are completely dissolved in ten to thirty minutes when treated at 40° with two to three cubic centimetres of this latex. The products of this digestion are the same as with pepsin; yet the two ferments are not identical, since the *Ficus* latex peptonizes in presence of alkalies as well as acids, although more slowly. Probably there are two peptic ferments present, one acting in acid, the other in alkaline, solutions.

By digestion with hydrochloric acid the latex entirely loses its peptonizing properties; digested with sodium carbonate (which destroys the activity of pepsin), it retains them intact. If a few drops of the latex be added to milk, which is then raised to the boiling temperature, the casein is at once precipitated. Incipient ebullition, therefore, does not destroy the curdling power of this latex, although prolonged ebullition does, and even a temperature of 65° if continued for two hours. The diastatic action of this latex is demonstrated by the partial transformation of starch-paste and glycogen into sugar. When the latex is precipitated by alcohol, and the precipitate taken up with water, the action on milk and on starch is found to persist, while that on fibrin disappears.

The latex of *Carica papaya* peptonizes, precipitates casein, and transforms starch into sugar.

The author does not consider that these vegetable ferments play any rôle in the nutrition of the plant.—*American Journal of Pharmacy*, March, 1887.

THE MECHANISM OF THE THIRD STAGE OF LABOR—THE SEPARATION OF THE PLACENTA.

At a meeting of the Obstetrical Society of London, held March 2, 1887, DR. CHAMPNEYS read the first of a series of papers on the above subject, reviewing the facts furnished by our knowledge of the clinical course of natural labor, and by that derived from Porro's operation (*British Medical Journal*, March 19, 1887). From the former it was known that, until the birth of the head, the placenta was not detached, and that after the birth of the head it was not at once detached. Leinser found, by examination of one hundred and sixty-eight women, that the placenta was completely detached as soon as the child was born. As regards Porro's operation, the inferences drawn from it must be regarded with suspicion, on account of the great interference which had taken place with the uterus. The facts derived from these two sources did not tally. He next discussed the theories of the cause of placental detachment: A. By contraction and retraction alone, through reduction of the placental site. B. By contraction and retraction indirectly: (a) by separation of the centre, which was less firmly attached than the edge, leading to aspiration of blood; (b) by squeezing blood towards the surface during contraction; (c) by rapid diminution of intra-uterine pressure, consequent on the birth of the child. C. By detrusion (Leinser), the placenta being forced in the direction of least resistance, namely, the axis of the parturient canal. He then discussed the theories of the modes of placental detachment: A. According to the situation of the placenta. B. From the edge. C. From the centre. D. According to the firmness of attachments of its parts. He then considered the evidence furnished by the various facts, and showed that the question was whether the separation of the placenta was independent of rupture of utero-placental vessels as a cause. The decision depended on (a) proved hemorrhage behind the placenta in normal labor; (b) on the mode of expulsion of the placenta. He concluded that hemor-

rhage to a moderate amount played a certain though subsidiary part in the mechanism of the detachment of the placenta.

METHYLAL.

Methylal is a fluid of specific gravity 0.855; its vapor density is 38°, taking hydrogen as a unit, and a boiling-point of 42° Cent., 107.6° Fahr. Its solubility in blood is one part in three; its composition is $C_4H_8O_2$. It is made by distilling methylic alcohol with sulphuric acid in the presence of peroxide of manganese, but it requires several redistillations before it can be obtained in the pure state, for which reason it is at present a very expensive compound.

When methylal is quite pure it is almost tasteless, but bites the tongue, and, owing to its low boiling-point, quickly evaporates. The odor of it is fragrant, and not very powerful. The pure vapor creates no irritation on being breathed.

After long exposure to the vapor of methylal, in an atmosphere containing not less than thirty-five per cent. of the vapor, warm-blooded animals may be made to pass into a sleep which, once established, is deep and prolonged.

Methylal was first introduced by Dr. B. W. Richardson, who in his early researches supposed that he had found that it was a marked narcotic, but he now states (*The Pharmaceutical Journal and Transactions*, February 19, 1887) that he believes that the narcotism so produced was due to the presence of acetone from the methylal not having been sufficiently pure. Recently, with a perfectly pure specimen, he endeavored to anæsthetize two dogs with methylal in order to enable them to be operated on painlessly. After half an hour's inhalation of the vapor narcotism was not produced. The fluid was then injected hypodermically in one animal and to the extent of an ounce dose, upon which a gentle sleep or rather intoxication followed, but with no sufficient anæsthesia to allow painless operating.

In action as a medicine, methylal lies between alcohol and anhydrous ether. It quickens the action of the heart with reduction of arterial pressure; it makes the respirations slow and deep; it induces a tendency to sleep; and it is a sedative to pain, but not to a very deep degree. On the whole, it would be best to keep it in the group of anodyne antispasmodics, in which Dr. Richardson originally put it. It causes very little muscular excite-

ment and no vomiting, but after long inhalation of its vapor it produces a free flow of saliva. As it mixes well with alcohol and with ether it might be administered with either of these agents, and it might also be given with amyl nitrite for the relief of colic, asthma, angina pectoris, or tetanus; but before it can come into general use it must be reduced in price.

Methylal is very soluble in water, and may be administered by the mouth when diluted with water or by hypodermic injection. Dr. Richardson recommends commencing with a dose of a fluidrachm, mixed either with glycerin or syrup of orange-flowers and distilled water.

THE SIGNIFICANCE OF URIC ACID DEPOSITS IN URINE.

DR. JOHANNES MYGGE, while chief of Professor Trier's clinic in Copenhagen, having repeatedly remarked abundant and persistent deposits of uric acid coinciding or alternating with albuminuria, carried out a series of examinations on the urine of the 272 male patients under his supervision. Of 3287 urines examined, 2786 from 127 patients were entirely free from uric acid deposits, while they were found in 501 specimens from 105 patients, but only in any considerable quantity in 262 specimens from 59 patients. In 43 of these last patients the deposits were of a transitory character,—that is, they were only observed once or twice; while in the remaining 16 they were found to persist for a week or more. Deposits, both of a transient and of a permanent character, were found, especially in rheumatic affections, whether of an acute or chronic form. Transient deposits were found also in pneumonia in 11 cases out of 25. In 27 out of the 59 patients in which uric acid deposits were observed albuminuria was also present in appreciable quantity, and in many of the rest there was a doubtful trace noted. Dr. Mygge's observations confirm Dr. Dickinson's statement that deposits of uric acid of a transitory character frequently coincide with the suppression of acute albuminuria. In the majority of cases where the deposit was examined microscopically, casts or tubal epithelium cells were found, indicating that some connection probably exists between uric acid deposits and functional renal disorder. In some instances, it may be supposed that a peculiar condition of urine, especially its supersaturation by uric acid or an increase in its acidity, has irritated the epithelium of the tubes, and has thus set up a renal lesion.

In others, the latter condition doubtless precedes the precipitation of uric acid, and here Esbach's theory of the precipitation of uric acid being due to the existence of morphological elements in the urine may afford an explanation.—*The Lancet*, February 12, 1887.

ARBUTIN.

Uva ursi leaves contain, in addition to tannic and gallic acids, a bitter glucoside, arbutin, already several times referred to in the GAZETTE, which is white, crystalline, and soluble in water. During the past four years several observers have tried to determine whether arbutin might not, with advantage, be substituted for the various preparations of *uva ursi* now in use. Lewin, in 1883 (*Virchow's Archiv*, xcii. p. 517), showed that arbutin splits up, when boiled with dilute sulphuric acid, into hydrochinon, methyl hydrochinon, and sugar, and stated that when administered it is in part decomposed, so that the urine contains besides arbutin a certain amount of hydrochinon. Now, hydrochinon is itself an antiseptic and antipyretic, and has been found useful by Brieger as an injection in gonorrhœa. Lewin recommended the substitution of arbutin, in 15-grain doses, for the ordinary preparations of *uva ursi*. *Uva ursi* is a reputed diuretic as well as a specific in vesical catarrh. Menche published a paper in 1883 (*Cent. f. Kl. Med.*, xxvii. p. 443) on arbutin as a diuretic, and recorded some cases which served to illustrate its value in cardiac dropsy. Subsequent observations have not confirmed Menche's views on this point. In a few cases of cardiac dropsy, in which the drug was given at the Manchester Infirmary, it proved wholly inefficacious as a diuretic.

Paschkis (*Wien. Med. Presse*, 1884, No. 13) obtained no good results from the use of arbutin in several cases of cystitis and gonorrhœa, though he found these ailments markedly improved by *uva ursi* itself. Either arbutin is not the active curative principle, at least in the doses employed by Paschkis (30 grains daily), or the preparation he used was not arbutin.

Schmiz (*Cent. f. Kl. Med.*, No. 49, 1884) found arbutin very useful in some cases of bladder catarrh. He did not see good results follow its use in all cases, but recommends its use in preference to *uva ursi* itself. Very recently Kunkel (*Munch. Med. Woch.*, December 7, 1886) published his investigations upon the absorption and excretion of arbutin, and has arrived at the conclusion that the

greater part is excreted unchanged; a little is decomposed in the intestine, but it is not decomposed, as Menche thought, in its passage through the system. At the present time, then, the value of arbutin must be regarded as doubtful, and though it may be tried in doses of 10 grains, where ordinary remedies have failed to relieve bladder catarrh, it cannot be used as a reliable remedy. Moreover, its price (about thirty-six cents a drachm) prevents its extensive use.—*Medical Chronicle*, March, 1887.

ANTIPYRETIC ACTION OF NITROGENIZED AIR.

DR. FRANCISCO VALENZUELA, of Madrid, has made some observations (published in *El Siglo Médico*, January 30, 1887) on the effect of inhalations of nitrogen, or rather of air containing an abnormally large proportion of nitrogen, upon febrile diseases. He compared its action in reducing temperature with that of cold applications, quinine, antipyrin, digitalis, and arsenic, and concludes that the inhalation of nitrogen is the only method of treatment the cessation of which for a day is not followed by a rise of temperature to its former height. It has also, he believes, a beneficial effect on the diseased process itself. The plan adopted was to administer the nitrogen in two daily sittings of from half an hour to an hour in duration, beginning with air containing 17.76 per cent. of oxygen, and gradually decreasing this proportion till at the close of the sitting it was reduced to twelve per cent. Some few details are given of a phthisical case in which it was tried. At first some dyspnoea was produced, but the evening temperature at once sank to normal, in addition to which the cough decreased, the blood almost entirely disappeared from the sputum, the sweats became less frequent, and the appetite improved. This patient had been previously treated by quinine, with but little good result. No other cases are reported, though several other patients were treated in this manner, most of whom are stated to have been benefited by it.—*The Lancet*, February 12, 1887.

Reviews.

ON DISORDERS OF DIGESTION; THEIR CONSEQUENCES AND TREATMENT. By T. LAUDER BRUNTON, M.D., D.Sc., F.R.S.

London and New York: Macmillan & Co., 1886.

This is a volume of nearly four hundred pages; the first eighty of which are occupied

with the Lettsomian Lectures, three in number, whose subject is the discussion of imperfect digestion, its results and its treatment. The rest of the work is a reprint of twenty-one papers, which have been previously published, most of them in the *London Practitioner*. No doubt the readers of the *THERAPEUTIC GAZETTE* have become acquainted with the various highly suggestive original articles written by Dr. Lauder Brunton as fast as they have been published, and we shall not occupy space with their discussion, but merely indicate the various subjects. These are Action of Mercury on the Liver—Physiological Researches on the Nature of Cholera—On the Action of Purgative Medicines—Atropine as an Antidote to Poisonous Mushrooms—Physiology of Vomiting and the Action of Anti-Emetics and Emetics—The Physiological Action of Alcohol—On the Action of Alteratives—Symptoms, Pathology, and the Treatment of Albuminuria—Arsenic in Albuminuria—On Dyspepsia—On the Use and Administration of Fats—On the Action of Tonics—Headache and Neuralgia and other Diseases connected with the Teeth—Indigestion as a Cause of Nervous Depression—Introductory Remarks on the Structure and Function of the Kidney—How to make a Poultice—On the Pathology of Dropsy—Pathology and Treatment of Headache—On the Action and Use of Diuretics—On Poisons formed from Food, and their Relation to Biliousness and Diarrhœa.

The Lettsomian Lectures have all the individuality that so plainly marks the work of Dr. Brunton, showing in extraordinary abundance curious out-of-the-way knowledge combined with a peculiarly brilliant suggestiveness and much literary skill. How a good dinner converted the doctor from an enemy of the London "City Companies" to a strong friend is well told on page 19, and shows clearly why these companies are enabled to spend so much money in riotous living and defy the efforts of the Parliamentary committee: for what Parliamentarian could withstand the seducing influence of a dinner whose æsthetic perfection is only comparable with the rare beauty that overspreads the canvas of a Raphael?

Every practitioner of medicine should carefully read these papers of Dr. Brunton at least once, or, if needs be, buy the book for such purpose. We cannot, of course, give the full argument, much less even shadow forth the details, which are, after all, the most valuable portions of the book. For the purpose, how-

ever, of affording a peep into this treasure-mine, we call attention to the way in which it is shown that the object of digestion is to break up the large molecules of beefsteak and bread into the small ones of peptone and maltose, so that they may readily pass through the atomic sieves, which are known as mucous membranes. Whilst within the liver the process is reversed, and the small molecules of peptone and maltose, which have been absorbed, are reconverted into the larger molecules of albumen, which are fit food for living tissues. Again, it is revealed that whilst most people are fully aware of the dangers of sewer-gas, comparatively few recognize the perils in which they daily live from the poisonous substances formed in their own intestines as the result of imperfect digestion. As is shown by a case reported by Senator in 1868, even enough sulphuretted hydrogen may be generated in a man's own abdomen to cause a fatal relapse. The researches of Ludwig, Schmidt-Mühlheim, Bocci and Brieger, and others are discussed by Dr. Brunton, as showing that alkaloids and other poisonous principles formed in the alimentary canal are capable of producing profound nervous depression or other serious poisoning, a fact which our readers will remember was abundantly confirmed in the Memoir published in this journal some months since, concerning the effect of pepsin peptones injected into the blood.

NERVOUS DISEASES AND THEIR DIAGNOSIS. A TREATISE UPON THE PHENOMENA PRODUCED BY DISEASES OF THE NERVOUS SYSTEM, WITH ESPECIAL REFERENCE TO THE RECOGNITION OF THEIR CAUSES. By H. C. Wood, M.D., LL.D.

Philadelphia: J. B. Lippincott Company, 1887.

In his "Introduction" the author states, "... In the course of years I have gradually adopted a method of instructing students which has seemed to me more in accord with the every-day needs of the medical practitioner, and more apt to lead to a practical understanding of disease of the nervous system than is that adopted in the ordinary treatises upon the subject. When a case offers itself for examination the physician must needs travel from the symptoms back to the lesion, and not from the lesion to the symptoms. He does not say, This man has a clot in the brain, therefore he has hemiplegia; but he begins with the paralysis, and passes from it by the process of induction to the lesion. Hitherto the authors of textbooks have travelled from the lesion to the symptoms. The present treatise is an attempt to follow the route which the practitioner must

pass over daily." In this statement rests not only a more than sufficient reason for placing another book before the profession, but also the general plan of the work, a new departure in medical literature which will find admirers wherever the book is read, and should claim numerous disciples among those who would enlighten the profession in medical matters, especially those connected with a specialty. Too frequently the writings of the specialist mystify rather than elucidate, and serve to impress the medical public with the complexity of such maladies, which only the special skill of the writer, or one of his ilk, can hope to unravel. Not so with the work before us. The exigencies of clinical teaching through a course of years have developed an appreciation of the needs of the student, together with an unusual aptitude for clear and impressive statement.

Chapter i., of seventy-three pages, is devoted to "Paralyses." The various forms of palsies are carefully classified, concisely defined, and, wherever possible, succinctly differentiated. All palsies are divided into *functional* and *organic*, and the latter further divided into six classes, including general palsy, hemiplegia, paraplegia, monoplegia, multiple palsies, and local palsy. Interesting cases of unique or strikingly typical character are interspersed here and elsewhere throughout the work.

Chapter ii., on "Motor Excitements," represents eighty-three pages. Disturbances of motility are divided, for convenience of clinical study, into convulsions, spasms, choreic movements, tremors, automatic movements, and contractions. These symptoms are defined, and the various diseases, of which one or other of them furnish characteristic symptoms, are considered and differentiated. Convulsions are divided into hysteroidal, epileptiform, and tetanic. Epileptiform convulsions are ascribed to idiopathic epilepsy, peripheral irritations, cardiac failure, organic disease of the brain, toxæmia, uræmia, and hysteria. Tetanic convulsions to hysteria, tetanus, poisoning, tetany. The other divisions of the subject are given due attention. The sections on epilepsy, tetanus, and chorea are exceptionally fresh and satisfactory.

Chapter iii., "Reflexes," covers thirteen pages, in which the various expressions of this interesting phenomenon are portrayed.

Chapter iv. deals with the "Disturbances of Equilibration," including disturbances of co-ordination, cerebellar titubation, and vertigo.

In chapter v. "Trophic Lesions" are dealt with in a masterly manner, inducing many who read it to look deeper than the surface for many superficial destructive lesions.

"Sensory Paralysis" in chapter vi., "Sensory Exaltations" in chapter vii., and "Disturbances of Special Senses" in chapter viii., will prove of great interest to the general practitioner, meeting, as he does, so constantly symptoms referable to these classes, which are with difficulty traced to their true source, or given their proper interpretation, until too late to materially benefit the sufferer.

The next two chapters deal with "Disorders of Memory and Consciousness." In the last chapter "Disorders of Intellection" are classified and concisely described. Here, as throughout the work, the characteristics of the author are prominent. Order is brought out of chaos, the mazy fog which gathers about nervous diseases is dispersed; simplicity supplants complexity. Whatever may be the verdict of the specialist, whose mental vision has become adjusted to the aforesaid fog, certainly the general practitioner and the medical student will acknowledge their deep indebtedness to the author for his simplicity, conciseness, absence of ambiguity, and, above all, for the unique idea of tracing a symptom to its source, and enabling all who meet with such stumbling-blocks to properly interpret their significance. Throughout the work gives evidence of the profound student, the alert clinician, and the impressive, thoughtful teacher. The first might have dived to even greater depths than the book makes claim, the second might reach as accurate conclusions in his own inner consciousness, but only the latter, through years of careful effort, could have elucidated the subject so satisfactorily. The interest of the book never flags nor tires; its statements are fresh and crisp.

J. B. WALKER.

THE CURABILITY OF INSANITY: A SERIES OF STUDIES.

By Pliny Earle, A.M., M.D.

Philadelphia: J. B. Lippincott Company, 1887.

This book is composed of eight studies on the subject of the Curability of Insanity, the first of which was written in 1876, the last in 1885. The cause of the writing of the first essay, and therefore of the whole book, was evidently the apparent inferiority in the results obtained by Dr. Earle in the institutions under his care to those achieved in certain other asylums. The essay written in 1876 clearly established the fact that the statistics

given by the various asylums of America were worse than useless, and were so misleading and unfair as that they might well be stigmatized as falsifications. One great source of fallacy was that cases of insanity would be reported over and over again as cured, the cures being merely the development of successive remissions. Thus, in the Friends' Asylum at Frankford, eighty-seven *persons* contributed two hundred and seventy-four recoveries to the statistics of the institution, whilst a close analysis shows that not more than two actual permanent recoveries occurred. A champion cure-maker was afforded in a patient in the Pennsylvania Hospital for the Insane, who was successful in furnishing in his own person thirty-two cures! An analysis of the reports of the State Hospital at Worcester, Mass., showed that seven persons furnished ninety-two recoveries, and "yet two of these persons finally died insane in the hospital, and the third is now an inmate of it, considered hopelessly insane." Of the ninety-two reported recoveries only four were permanent.

Both space and inclination are wanting to follow further the analysis of various asylum reports made by Dr. Earle. The statistics of the asylums were rendered still more favorable not only by confounding persons and cases, but also by a juggling which is little less than criminal. If ten cases originated in a year and seven recovered, these seven were reported as cures of recent cases, while the other three were put into the list of cases sick for more than a year,—*i.e.*, of cases not recent. In this way it was apparently proven in some asylum reports that from ninety to one hundred per cent. of recent cases got well, and justification was obtained for the assertions of Dr. William H. Stokes, of the Mount Hope Institution at Baltimore, Md., that "not merely *nine* out of ten cases of insanity, of a less duration than one year, may be cured, but that *ninety-nine* in a hundred can be radically restored, unless there exists in the individual a strong constitutional tendency to mental disease, or unless circumstances beyond our control, and the injurious tendency of which has been fully explained, intervene to interrupt and disturb the process of cure."

The eighth study of Dr. Earle, written in 1885, is interesting as giving the latest and most reliable data which we have in regard to the curability of insanity. The most reliable previous collocation of cases was that made by Dr. T. A. Chapman, of the Hereford Asylum

of England, in which, out of ninety-three thousand four hundred and forty-three cases of insanity occurring between 1872 and 1882, the percentage of the whole number of recoveries is thirty-eight, or, if recent cases are alone considered, forty-two and one-half. The statistics of twenty-three British asylums, collocated by Dr. Earle himself, give the proportionate recoveries in all cases forty-four per cent., in recent cases fifty-five per cent. In thirty American hospitals whose statistics have been examined and collocated by Dr. Earle himself, the proportion of recoveries, as compared with admissions, is twenty-nine per cent. ; of recent cases, fifty-four per cent.

We cannot further follow the statistics discussed by Dr. Earle. As far as they go they seem to us that the recoveries in the British asylums exceed those in the American institutions by between eight and nine per cent. An important conclusion reached by Dr. Earle is that the per cent. of the reported recoveries in all cases received at the hospitals in this country still continues to diminish. Various causes may be assigned for this, but, to our thinking, *the one* real cause is the increased honesty and care in the making of the statistics. In bringing this about the writings of Dr. Earle have played a very important part, and we are glad that permanent form has been given to work which otherwise might have been buried in the mountains of chaff which largely make up the ever-increasing mountain ranges of American medical periodical literature.

THE PRINCIPLES OF PHARMACOGNOSY. By Friedrich A. Fluckiger, Ph.D., M.D., Professor in the University of Strasburg, and Alexander Tschirch, Ph.D. Translated by Frederick B. Power, Ph.D. New York: Wm. Wood & Co., 1887.

According to the authors of the work before us, the use and primary object of pharmacognosy is the study of botany, zoology, and pharmacy of medicinal agents, and the arrangement of the material in a scientific form by an appropriate and comprehensive representation, so as to subject it to a closer examination. The term pharmacology they restrict to the science which treats of the therapeutic action of medicinal agents. In most of our English works pharmacology is considered as comprehending the study of everything that relates to medicines. In treating pharmacognosy the authors consider the following points as prominent: first, naming the plant; second, the geographical distribution; third, cultivation; fourth, col-

lection and appropriation; fifth, commercial relations; sixth, description; seventh, morphological characters; eighth, microscopic structure; ninth, chemical constituents; tenth, substitution and adulterations; eleventh, history; twelfth, pharmacognostical systems. The great bulk of the work, namely, from page 55 to page 279, is chiefly a study of the anatomy of plants. It is very fully illustrated with nearly two hundred figures, which are well drawn and characteristic, and of great value to those students of pharmacy who desire to precede their study of the individual drugs by a thorough education in the anatomy of plants, and especially of those portions of the plants which contain medicinal agents.

To the physician this book does not appeal very strongly. The professions of pharmacy and medicine are more and more divorced as progress increases in each branch the extent of the field to be covered by its students. The modern and growing method of preparing medicinal agents on an immense scale, and furnishing them to the practitioner and to the druggist all ready for exhibition, bids fair to choke out even the scientific pharmacist, and to make the druggist merely a commercial distributing channel, through which pour the rills from the great lake. If this continues, the modern pharmacist must become more and more commercial in his tone and life, whilst a few highly-cultivated scientific specialists find employment in the great manufacturing houses.

Correspondence.

LONDON.

(From our Special Correspondent.)

Since my last letter to you an event has occurred in our pharmacological world which gives us the liveliest satisfaction, and which I am sure will awaken similar sentiments in yourselves when its significance is fully appreciated. I refer to the appointment of Dr. Cash to the important chair of *Materia Medica* in the University of Aberdeen. Your readers have doubtless heard of the distressing death of Dr. Davidson, the late professor,—how he fell down apoplectic in the presence of his students, a victim of constitutional gout, against which he had struggled manfully and patiently for many years. To worthily fill the post left vacant by such a man was no easy task. But beyond the question of mere

ability, it was felt by those who have the advancement of scientific pharmacology in this country at heart, that the present opportunity was not to be lost of planting a centre in the far north which should extend a knowledge of the newer methods and the more exact results of therapeutical research to the farthest extremity of the kingdom. Dr. Cash is known throughout the world of medicine by the many valuable contributions which he has made to physiology and pharmacology, in connection especially with his old master Ludwig, and more recently with his friend Dr. Lauder Brunton, whom he has assisted for several years. His candidature was therefore warmly supported by many of our leading men; yet for a time the issue was doubtful, a disturbing rumor being raised that a distinguished Aberdeen surgeon was to succeed to the vacant chair by a kind of local right. Nothing could possibly be more undesirable than that the work of a great department such as this should be allowed to degenerate into a series of dry lectures on the *materia medica*, with a compilation of the latest therapeutical applications of drugs arranged on a purely empirical basis. This is the kind of course which was generally accepted in our country until within the last few years. The government, which in the present instance possessed the patronage of the chair, is to be congratulated on its choice, and the northern university on the latest addition to their professorial staff.

It occurs to me, in connection with this event, that your readers may be pleased to learn something about our ancient Scottish universities. I say "learn," for I cannot expect that the profession in the States can possibly be generally conversant with institutions which are but imperfectly known and understood even in England. Whilst in London we have now no fewer than twelve schools of medicine, all perfectly self-supporting and independent of the state, and whilst our only university was founded but fifty years ago, and is nothing more than a complicated examining machine without professors or pupils, Scotland possesses four universities subsidized by the nation, of venerable age, the centres of the greatest literary and scientific activity. Edinburgh and Glasgow, St. Andrew's and Aberdeen, are universities in the proper sense of the word,—universities founded originally on Italian and French models, but now approximating more closely in many respects to the German type, with which many of your readers are personally familiar. The professors are chosen from the most distinguished

men of the three kingdoms. They enjoy an income, from salary and fees, which is always ample, and in many instances very handsome,—at Edinburgh, for example, several of the medical chairs are worth over two thousand pounds a year. The general control of the universities is vested in a small court, on which are representatives of the graduates, the crown, and the students respectively. The graduates hold a council or convocation on fixed and special occasions, and publicly discuss the affairs of their alma mater. The executive body is practically the senate, which is composed of the professors and principal, and which exercises full control over the students not only in college but out of college. I need hardly add that the many advantages of university life are fully enjoyed by Scotch students, who display all the traditional independence, the sense of self-importance, and the antagonism to “the town,” which appear to be essential features of the undergraduate in every country. In surroundings such as these, and with an assured competence, Scottish professors are free to devote their whole time and energies to their special work,—to the discovery, that is, and the exposition of the truth. Those members of the medical faculty who desire hospital and consulting practice may usually secure it by their talents and general claims, and can carry it on without that harassing waste of time and energy, that incessant worry, of which I hear so much complaint from our busier men in London. These remarks apply particularly to the University of Aberdeen, where you may confidently look for much good work from the new pharmacological department. The place is filled with traditions of honest labor and learning. Founded in 1494, in the reign of James IV. of Scotland (strange to think, at the very time of the voyages of Columbus!), the University of Aberdeen has produced such men as the Gregorys, Beattie the poet, Reid the philosopher, many mathematicians and physicists of the first rank, and some of the foremost men of science of the present day.

Another very satisfactory sign of the spread of the newer therapeutics is the character of the books that have recently been placed in our hands and in the hands of students by recognized authorities on this subject. Prominent among these is the great work by Dr. Lauder Brunton, which, I am glad to see, has already reached a third edition. This book is as well known with you as it is with us, having been adapted to your Pharmacopœia by Dr. Williams. Your readers will learn with some

amusement that Dr. Brunton has been charged with borrowing from the homœopaths in the compilation of his therapeutical index. Ingenious and persistent efforts have been made to drag him into a public controversy on this subject in the columns of the medical journals,—into a controversy, of course, of that endless, useless kind of which we have all been heartily sick as often as the different therapeutic schools have assailed one another. In the present instance the gauntlet has been thrown down by a highly respectable homœopathic practitioner in town of the name of Dr. Dudgeon, who enjoyed no doubt the opportunity which his challenge afforded him, of standing forth as the champion of truth and reason. With characteristic Scottish caution, and with the tacit approval of all who have had experience in such matters, Dr. Brunton has denied himself the pleasure of public combat. However, on being again assailed in the *Lancet*, he has replied that he will join issue with his opponent,—not in the pages of the medical press, but in the preface to the new edition of his book. We do not expect to find the promised discussion the most profitable portion of the new volume, for, as I have just said, controversies of this kind are usually utterly barren of good results; but for all that we shall turn to it with interest, not to say amusement, as a little incident in the history of therapeutics.

A very important question has lately arisen in this country in connection with our Pharmacopœia, namely, whether the preparations contained in it are strictly official. A public analyst in Sheffield discovered that some samples of tincture of opium that he had caused to be purchased in the town contained a very insufficient amount both of opium and of spirit. When the case was brought before the magistrate it was dismissed, the worthy justice being of opinion that “tincture of opium” means *any* tincture of opium; that the chemist may dispense any compound of opium and spirit he pleases under this name; that there is no law to compel a pharmacist to follow the British Pharmacopœia formula. This is a startling finding for us, who have always believed that “official” remedies are the only compounds that may be sold *under the official titles*; and I need hardly say that it has caused a flutter not only among the pharmacists but in the profession. If there be no better definition of tincture of opium, as sold in this country, than *any* tincture made from opium, there is an end of prescribing. However, we have good reason to believe that the Sheffield

magistrate gave judgment on insufficient information. It appears that although the Medical Act which directs that the first British Pharmacopœia should be compiled did not explicitly command it to be followed, it distinctly confirmed all previous Acts and Orders in Council relating to the London, Edinburgh, and Dublin Pharmacopœias, and that one of these orders expressly charges "all apothecaries and others whose business it is to compound medicines . . . within Her Majesty's kingdom . . . that they do not compound or make any medicine or medicinal receipt or prescription, or distil any oil or waters, or make other extracts that are or shall be in the Pharmacopœia, . . . in any other manner or form than is or shall be directed, prescribed, and set down by the said book."

The discussion of this subject has naturally raised the question of the meaning and value of a "national" Pharmacopœia. We understand that in the States your Pharmacopœia is not the production and property of the nation; that it is only a convenient compilation of formulæ for preparing drugs which your pharmacists may or may not follow. I may be wrong in this interpretation; but if I am right, do you not run a constant risk of obtaining improper substitutes for officinal preparations at the hands of unscrupulous druggists?

Another question in connection with our British Pharmacopœia which has recently been exercising us, is the best method of keeping it up to date. So rapid is the advance of pharmacology nowadays that the Pharmacopœia speedily becomes obsolete. The last British Pharmacopœia (1867) was almost useless for this reason before the appearance of its successor in 1885, and even this "new" Pharmacopœia, as we still call it, already begins to fall behind the times in a similar fashion. Our Pharmacopœia is published by the General Medical Council, a body composed of representatives of all the licensing medical authorities in the three kingdoms (including, of course, the universities), of the practitioners of medicine and of the crown. This council has entire control of medical education and legislation in this country, and one of its committees compiles our national codex. I have been favored with a copy of the report of this committee, presented to the council at its winter session a few days ago; and I find in it a valuable recommendation as to the plan to be adopted for keeping the Pharmacopœia up to date. This scheme has been framed by Professor

Attfeld, whose fame as a chemist is as great with you as with ourselves, and whose services have most wisely been retained as reporter by the council after the completion of the present British Pharmacopœia, the production of which was in a great measure his work. Dr. Attfeld submits to the council a collection of abstracts of all published criticisms of the British Pharmacopœia and technical suggestions, as well as notes of all original investigations, that seemed likely in any way to aid in the production of a future Pharmacopœia. He recommends that these and similar abstracts and notes in the future be printed (for official use only) and submitted to the standing committee, which will thus steadily acquire the materials for the production of a new codex, or for the correction of the present codex, as circumstances may demand. Already, Dr. Attfeld adds, since the current Pharmacopœia was issued, there have been published some valuable improvements of official processes,—improvements which may deserve incorporation. Prominent among these improvements are methods for securing constant strength in powerful remedies, hitherto liable to vary considerably in strength. The processes that provide for fairly constant strength in the preparations of cinchona, nux vomica, and opium appear likely to be extended to preparations of belladonna, ipecacuanha, and some other potent drugs. A dispensing difficulty, however, has arisen in connection with the semi-solid "standardized" extracts of such drugs. Inasmuch as the non-alkaloidal soluble material in nux vomica seeds, *e.g.*, varies greatly in different parcels, it follows that an extract evaporated to the proper alkaloidal strength, while occasionally of fit pilular consistence, will sometimes be almost fluid. Such a difficulty can be surmounted by adding some solid neutral substance, such as milk sugar, to the soft extract to bring it to the desired pilular firmness. British pharmacists, however, bearing in mind the action of the Food and Drug Acts, hesitate to add foreign substances to their drugs without official sanction. Custom, however, sanctions the employment of excipients by the pharmacist at his discretion, and he doubtless will sooner or later find modes of adjusting the advantage of constancy in strength of powerful drugs with inconvenience in dispensing such "standardized" drugs. I may remark with respect to the variable consistence of standardized extracts, referred to by Dr. Attfeld, that custom is changing here in the manner of *pre-*

scribing pills. Few of us now seriously attempt to express our familiarity with the consistence of an extract. We very commonly order the quantities which we desire of the important ingredients, and complete the prescription with "*in formâ pilulâ*," leaving the intelligent pharmacist (and all our pharmacists are now required by law to be intelligent in such matters) to find the most suitable excipient for himself.

BERLIN.

(From our Special Correspondent.)

The medical world of Germany is suffering from a loss, which is almost irreparable, in the death of Carl Schröder, who died on February 7, after a brief illness, of cerebral abscess. He was the most celebrated German gynecologist of the present time. Schröder had attained world-wide reputation through his two books, which marked epochs in medicine, his "Text-Book on Obstetrics, including the Pathology of Pregnancy and the Puerperal State," and his "Handbook of Diseases of the Sexual Organs of Women." He was only thirty-eight years old when, in 1876, he was chosen to succeed E. Martin as regular professor of the Lying-in and Gynecological Clinic, and went to Berlin. One of his most remarkable achievements was the erection and remodelling of the clinic building, which is regarded as the best of its kind by the physicians and students of the nation.

Schröder was only permitted to enjoy a little more than four years' usefulness in this institution when he died at the age of forty-nine, in the height of his scientific activity. His latest work, published last year, "The Pregnant and Parturient Uterus," proves how much we could have expected from him.

Foreigners, especially Americans, many of whom are numbered among his students, will join us in regretting his loss.

From the 13th to the 16th of April will be held the sixteenth congress of the German Surgical Association, under the presidency of R. von Volkmann, and about the same time the Sixth Congress for Internal Medicine will be held in Wiesbaden, with Leyden as president: the latter congress has already announced its programme. One day's consideration will be given to the "Therapy of Phthisis," the "Localization of Cerebral Diseases," and the "Pathology and Therapy of Pertussis."

The first subject will be of especial interest,

as giving the views of this great association, which numbers among its members many of the greatest living authorities with regard to the many recently recommended methods of treatment in phthisis; and the physicians discussing the question will endeavor to bring the therapy of this disease into accord with their own experience and best knowledge.

We shall report this congress for the readers of the GAZETTE.

A new periodical has recently appeared in Berlin, under the editorship of Professor Liebreich, called the *Therapeutic Monthly*. Its purpose and scope are similar to that of the THERAPEUTIC GAZETTE in America, the *Practitioner* in England, and the *Bulletin de Thérapeutique* of France, and to form a repository for matters of interest regarding therapeutic questions. Up to the present time there has been no such organ, although there is an abundance of valuable journals in Berlin.

We mentioned in our former letter the results obtained by Harrlich in Leyden's clinic in the treatment of joint-rheumatism. At a later meeting of the Society for Internal Medicine the same observer continued his remarks, and discussed the effects of salol in the treatment of acute infectious diseases, especially typhoid fever. He came to the conclusion that, although the remedy proposed accomplished as much as was claimed for the carbolic acid treatment of typhoid, it had developed no specific power in infectious diseases, and especially in typhoid. It cannot shorten the disease nor cut short the process of infection, as quinine acts in malaria. The satisfactory use of salol in typhoid is limited to its effect upon the symptoms only; as an antiseptic, in common with others, it may be valuable to reduce temperature. In a number of severe cases, which have been under observation for some time, when pure salicylic acid had been given, salol was not found to be excreted; the possibility of the combination of salicylic with carbolic acid in the organism is to be considered.

Guttmann, of the "Moabit" hospital, has reached the same conclusions after treating seventeen cases of acute joint-rheumatism and several cases of typhoid.

Fränkel has given us a new indication for the use of massage in a lecture delivered before the Society for Internal Medicine upon weakness in vocalization. The six cases on which he based his theory were four singers, a clergyman, and a teacher. All of the cases showed marked inability to use the voice at

certain times when attempting to sing, to accent in a loud voice, and to emphasize a pathetic passage in an address. This aphonia, however, could be overcome by a strong volition. Laryngoscopic examination gave a negative result. Simulation and hysterical paralysis were excluded. Following the analogy of the name *mogigraphia* for writer's cramp, Fränkel has named this affection *mogiphonia*. In the last case described by this writer the following treatment was pursued: the throat of the singer was well rubbed with lanolin, and both sides simultaneously, beginning at the angle of the jaw and extending downward. At the anterior border of the sterno-cleido-mastoid muscles the fingers on each side pressed the larynx as closely as possible without pain. This massage was repeated daily at sittings at which fifty frictions over the larynx were made, and the hand was also carried across the throat at the *os hyoides*. After a very few days a marked improvement was noticed, and in six weeks the patient was able to sing for more than half an hour. Fränkel urges the adoption of his method in similar cases.

Langenbeck, director of the Lazarus Hospital, reports in the Berlin Medical Association the following interesting experiences in cholecystotomy and cholecystectomy. In cases which have resisted internal treatment, and where surgical treatment seems indicated, he prefers extirpation of the gall-bladder to all other procedures. He has already operated upon twelve cases, of whom only two have died from complications; the others recovered, and of these it is known that several have enjoyed good health for four or five years. In chronic obstruction of the gall-duct Langenbeck operated three times; in one case he failed to render the duct patulous; in two others he evacuated the abscess, which had formed at the obstruction, removing pus mixed with bile; one of these cases he showed to the society. In this case an exploratory incision found the gall-bladder very much contracted, and cholecystotomy was determined upon. On opening the gall-bladder there was a discharge of thick greenish-gray pus. The patient recovered rapidly. In two or three weeks the discharge from the gall-bladder ceased; bile was present in considerable amount in the intestines, the feces were dark brown in color, and the stools occurred regularly.

After six or seven weeks the fistula which had been formed closed entirely. In the other similar cases the fistulae have not en-

tirely closed, a very fine opening remaining, from which a little bile is at times discharged. In the same society, on February 9, Professor Küster, director of the Surgical Department of the Augusta Hospital, demonstrated one of the very rare cases of originally diagnosed pancreatic cysts.

Up to the present time there have been but eleven cases of cysts of the pancreas operated upon, and of these nine were incorrectly diagnosed. The correct diagnoses were those of Gussenbauer, of Prague, and Senn, of Chicago, and these diagnoses were those of a high degree of probability only.

The case demonstrated was that of a strong man, 46 years old, who had suffered very little ill health, but who had eight years previous sustained a severe contusion of the back from a fall. In the summer of 1885 he was frequently attacked by cardialgia, which, in December of that year, became so severe that he sought medical treatment. About the end of February, 1886, a tumor in the epigastrium was discovered. On the 15th of July, 1886, he came to Prof. Küster for treatment with the diagnosis of *echinococcus* of the liver. On careful examination it was seen that the tumor fluctuated and showed distinct pulsation. Percussion proved that it was not attached to the liver. Exploratory puncture revealed a dirty yellow-colored liquid containing much albumen. Examination with the microscope showed a large number of red blood-corpuscles. All of these signs led Küster to diagnose a pancreatic cyst. He reached this conclusion from the position of the tumor, and by excluding the following conditions: aneurism of the abdominal aorta and its branches; cysts of the suprarenal capsules; *echinococcus* of the liver and spleen; enlarged lymphatics; ovarian cysts were excluded by the patient's sex; malignant, small tumors in this region; after careful study of these conditions, it was thought to be correctly diagnosed as a pancreatic cyst, and an operation deemed advisable. On July 20 the abdomen was opened by an incision which extended from the tip of the sternum to a point one and one-quarter inches below the umbilicus. A large cyst at once presented, its upper extremity covered by the stomach, its lower extremity by the transverse colon. The ligamentum gastro-colicum was adherent to the cyst; the latter was partially detached and cut across, and its flaps sewed to the abdominal wall. The cyst proper, thus separated from its adhesion, was punctured and emptied of two and one-half quarts of liquid.

It was then incised transversely, and sewed for a second time to the wall of the abdomen ; its cavity was cleansed and tamponed with iodoform gauze, and the incision almost closed.

On August 18 the wound was entirely closed, except a very small fistula, which was also healed by September 2. The patient had suffered no inconvenience, and had gained forty pounds in weight. Up to the present time there are three methods of operating for cysts of the pancreas,—simple puncture and evacuation, extirpation, and incision and sewing the sac to the abdominal wall. Kuster decides without question in favor of the third method. Of the five cases of extirpation four died ; in contrast is the result of the six cases where incision and suturing were done. All recovered, and five made speedy recoveries to comfortable health ; in only one a small fistula persisted.

February 21, 1887.

PARIS.

(From our Special Correspondent.)

The study of alkaloids and active principles is always of some importance, as they most likely represent the *materia medica* of the future. For this reason all recent experiments, chemical or physiological, respecting the older or the comparatively new alkaloids, or active principles, are generally deserving of notice.

The latest to receive the attention of French investigators are digitaline, hyoscine, and ulexine. *Digitaline* is certainly not a new-comer. The trouble is there are several substances known as digitaline, some of German make, others of French manufacture, and none seem to be exactly alike. In fact, there are too many digitalines. M. Lafon, in a paper which was this year awarded the Baignet prize by the Academy of Medicine, has again attempted the solution of a difficult and much vexed question, which he had already investigated. Although it cannot be said he has entirely succeeded, the results arrived at are worth recording. Briefly stated they are as follows : To begin with the chemical properties, M. Lafon has found a new color reaction of digitaline. When the substance in question is moistened with a small quantity of sulphuric acid, mixed with an equal weight of alcohol, on gently heating, and adding a trace of dilute perchloride of iron, a magnificent greenish-blue coloration

is obtained, which persists for twenty-four hours.

Physically and chemically (1) all the French crystallized digitalines are nearly identical ; (2) Homolle and Quévenne's digitaline and the Codex amorphous digitaline are very nearly identical with the German *digitoxine* ; (3) German digitalines are quite different from the French. Toxically (1) the crystallized digitalines—either Nativelle's, Homolle and Quévenne's, or Duquesnel's—are substantially alike, from 2 to 3 centigrammes being sufficient to kill a dog weighing twelve to fifteen kilogrammes ; (2) the amorphous French digitalines—Codex chloroformic, Homolle and Quévenne's, etc.—have very sensibly the same toxic power ; (3) the product sold in Germany under the name of *digitoxine*, and considered there the most active principle in *digitalis*, possesses about the same toxicity as crystallized digitalines.

Physiologically digitaline acts as follows : (1) Its absorption is very slow. (2) It is not eliminated by the kidneys ; its presence never being detected in urine. (3) It appears to accumulate in no particular organ, at least in the shape of digitaline. All chemical tests failed to detect it in one organ more than in another, after acute or after slow poisoning. (4) It is not sensibly modified in the digestive tube, but possibly may be oxidized in the circulatory organs. (5) Digitaline is with difficulty altered by chemical and physical agents, fermentation, and putrefaction. Two things at least seem clear from M. Lafon's investigations, namely, that German *digitoxine* and French digitaline are substantially identical, and that German digitaline is a product quite different from either.

The physiological action of *hyoscine*—an alkaloid derived from *hyoscyamine*—was examined and discussed at a meeting of the Paris Société de Biologie (March 19). Messrs. Gley and Rondeau related that hydrochlorate of hyoscine, in the dose of 1 centigramme for a medium-sized dog, has a soporific influence. In larger doses the moderating effect of the pneumogastric nerve on the heart is suppressed, and the same happened in respect to the action of the chorda tympani on the secretion of the submaxillary gland. Clinical experiments with about fifty patients have shown very speedy and powerful mydriatic effects to be obtainable from one drop of a one per cent. solution of hyoscine hydrochlorate. On being questioned by M. Laborde, M. Gley added that hyoscine and atropine greatly differ as regards their my-

driatic action. With hyoscine the maximum dilatation of the pupil is observed after six, or, at most, eight minutes, while with atropine from twelve to twenty minutes are necessary. Besides, physiologically, hyoscine possesses hypnotic properties not found in atropine, except perhaps in very high doses. Another difference, M. Laborde thought, is that the effects of hyoscine are more persistent.

Physiological Properties of Ulexine.—Ulexine is an alkaloid found by A. W. Gerrard in the seeds of the *Ulex Europæus*, common furze or gorse, a thorny plant growing wild in the temperate regions of Europe. In fact, English and French farmers rather consider the bush a nuisance, only fit for the fireplace; while, if Sowerby be believed, Linnæus, on his first visit to England, at the sight of the flowering shrub in Hounslow Heath, fell on his knees, and thanked God for having created a plant so beautiful. The same diversity of opinion appears to prevail in regard to the properties of the alkaloid. The process for preparing ulexine, briefly stated, consists in exhausting with alcohol of eighty-four degrees the coarsely-powdered seeds, evaporating the percolate to syrupy consistence, and washing this extract with successive portions of water. The watery solution, which now contains the alkaloid, is concentrated by evaporation, and shaken with chloroform in the presence of an excess of ammonia. The impure chloroformic solution of the alkaloid being purified by several solutions in acid water and re-precipitations, too well known to here need description, the substance is finally obtained in the shape of crystalline masses, which are colorless, inodorous, and soluble in water. The alkaloid has a bitter, slightly acrid taste. It forms definite and crystallizable salts, of which the hydrochlorate, being very soluble in water, was selected for a series of experiments performed by Dr. Pinet, in Prof. Vulpian's laboratory, under the professor's advice and supervision. The results of the investigation, just published in *Arch. de Physiol.*, No. 2, are the following: To begin with, Dr. Pinet differs from the English opinion that "ulexine is a paralyzer, able to cause clonic convulsions; on the tongue the effect is somewhat like that of cocaine, but less marked."* Ulexine convulsions have been found to much resemble those caused by nicotine. They begin within three minutes after hypodermic administration; after from five to seven minutes the animal is semi-

comatose, respiratory motions cease, but the cardiac beatings persist. Ulexine appears to affect, not the muscular, but the nervous system, beginning with the central and ending with the peripheric nervous system.

For a frog weighing thirty grammes (one ounce) 5 milligrammes ($\frac{1}{12}$ of a grain) of ulexine is a lethal dose. The heart-beats become weaker and weaker, and stop in the diastole. A non-mortal dose—1 milligramme—for an animal of the same size brings on convulsions and narcosis; the heart keeps beating, muscular contractility remains intact in all cases, and the local anæsthesia mentioned by English writers, and compared by them to that of cocaine, has never been observed by Dr. Pinet.

With a guinea-pig weighing three hundred and twenty grammes (ten and one-half ounces) 5 milligrammes of ulexine have no effect. It takes 1 centigramme ($\frac{1}{10}$ of a grain) to affect the animal. Somnolence, heaviness, and slight narcosis ensue, and the creature dies asleep, as it were.

Ulexine not an Antidote against Strychnine.—The narcotic properties of ulexine naturally led Dr. Pinet to try whether it is physiologically antagonistic to strychnine. To a limited extent it is, and even but temporarily so. The effects of ulexine are very speedy, so that when administered after strychnine it masks for a while the tetanic action of the first alkaloid, and apparent immunity results. But soon the influence of ulexine vanishes, and strychnine, gradually resuming the mastery, again exerts its usual effects.

And now to turn from the study of therapeutic agents for their own sake to the medicaments recommended for special affections, several novel modes of treatment have been spoken of by French practitioners. Among them may be noticed two remedies for diabetes, and a very simple one for deficient lactation.

Belladonna and Opium in Acute Diabetes.—In a memoir read before the Academy of Sciences at one of its sittings in February (14), Dr. Villemin related a case, unfortunately alone of its kind, but very interesting in itself. It was as follows: On March 11, 1882, a young artilleryman was sent for treatment to the Val-de-Grâce military hospital in Paris. The patient, a tall, stout-limbed young man, complained of failing strength, cramps, muscular pains, and sore throat; his thirst nothing could quench, and his hunger nothing could sate. But the aliments afforded no strength, and the liquids only passed off in

* The English text is not quoted by Dr. Pinet.

the urine, which had become so abundant as to interfere with sleep. Upon analysis, glucose was at once detected, in the proportion of fifty-eight grammes per litre, which, at the rate of fourteen litres and a half voided in twenty-four hours, corresponds to eight hundred and forty-one grammes, or nearly two pounds of glucose.

At first the usual treatment was resorted to, namely, gluten bread, meat, alkalies, abstinence from sugar and starchy foods, etc. But after eight days no improvement had occurred; the urine still kept at between twelve and fourteen litres; the proportion of sugar remained nearly the same, and a fatal ending was evidently near, when Dr. Villemin thought of trying on his glucosuric patient the belladonna and opium treatment, which had proved successful with another one suffering from diabetes insipidus.

It was not, however, without some misgivings lest glycemic accidents might be brought on, and therefore great caution was at first observed. On March 20 10 centigrammes ($1\frac{1}{2}$ grains) of extract of belladonna and 5 centigrammes ($\frac{3}{4}$ of a grain) of aqueous extract of opium were administered within twenty-four hours, the same being continued to the 27th. On that day the quantity of urine had fallen down to ten litres, and the sugar to forty grammes per litre. The doses were now gradually increased, so that on May 20 they had become 15 centigrammes ($2\frac{1}{2}$ grains) of each extract. The urine was at that time reduced to between three and four litres a day, with a proportion of sugar varying between two and five grammes per litre. From May 20 the dose was increased to 20 centigrammes (3 grains); eight days later the sugar had disappeared altogether. For seventeen days longer the treatment was continued, without any reappearance of glucose being observed. On June 14, the medicines having been suddenly withheld, the sugar within three days reached again sixteen grammes per day. The medication being then resumed, the sugar disappeared as before, and the patient kept well, under its influence, for over five weeks, when bromide of potassium was near the end of August substituted for the narcotic extracts. The relapse was as remarkable as before, and the same effect resulted when either the opium or the belladonna were omitted from the daily dose. Hence Dr. Villemin insists upon the importance of associating the two substances together. On December 15 the patient, having recovered nearly his usual weight and ap-

parent health, insisted upon leaving the hospital. He was discharged, and never heard of again.

Arsenic and Lithia for Diabetes.—At a meeting of the Paris Société de Thérapeutique (February 23) Dr. Martineau recommended the following treatment, with which, he said, he had cured sixty-seven out of seventy patients suffering from arthritic diabetes:

Carbonate of lithium, 3 grains;
Arsenate of sodium, $\frac{1}{10}$ grain;
Carbonic acid water, 2 pints.

Effect the solution under pressure. The effervescing liquid is to be drunk at meals, mixed with claret, and the foregoing dose is to last for at least three meals, being taken at the two principal meals of the day, customary in Paris. No change of diet is necessary. Dr. Martineau's fellow-members—Dr. Dujardin-Beaumetz among them—were somewhat sceptical about the value of the treatment, but it is so simple and easy that it can be given a trial when the patient is not dangerously ill.

Electricity to promote Lactation.—Dr. H. Pierron, a well-known gynæcologist, calls attention to the use of electricity for exciting the mammary secretion when no apparent reason exists for its failing. Without claiming invention, or even priority, he says he was first induced in 1884, upon theoretical grounds, to try it in the case of a lady patient who was anxious to nurse her own child. Although in excellent health, and everything had been done that science could suggest and wealth afford, she was unable to supply the child with enough nourishment. Dr. Pierron was successful in obtaining the desired result by means of the intermittent current of Gaëffe's induction apparatus applied to the mammary glands. The secretion thus secured was abundant and excellent in quality.

Since then the same treatment has been satisfactorily employed in all similar cases, to the exclusion of other means, when lately a difficulty of another sort occurred. A primipara had weaned her baby, but after fifteen days she noticed it was declining and pining for the breast, scarcely touching other food. In the mean time the lactary secretion had ceased, and menstruation resumed its course. The electric treatment was again resorted to, and after four applications full breasts were the result, with an abundance of good milk, and for the last two months everything has been going on to the satisfaction of all concerned.

The mode of operating with Gaëffe's apparatus is as follows: The negative pole, a spheroidal copper or brass cap, is to be applied under the breast. The positive pole, a round copper ball, is then first placed near the nipple, so as to touch the foldings of the skin, thus stimulating the glandular orifices to begin with. The positive pole is next moved around over the whole mammary gland, working from the centre to the periphery, while the negative pole, which it is approaching, follows its motion at the base of the breast. The same operation is to be performed on each breast in succession at one sitting, but the electric current must at first be weak enough to cause no pain on an organ naturally very sensitive. A second application is made at the same sitting with a current slightly stronger, and the whole together must not last more than ten minutes. The performance is to be repeated every twenty-four hours, and four applications are usually sufficient to cause the flow of milk, when it has only been delayed. When the secretion has already been purposely suppressed, the physician should not despair if he has to renew the operation eight times.

To conclude with a piece of news, Dr. Bergeron was yesterday (March 22) elected perpetual secretary of the Academy of Medicine, in place of the late Dr. Béclard. The contest was very close, as Dr. Jaccoud was also a candidate for the office. At the first ballot Dr. Bergeron obtained forty-six votes out of ninety-one, exactly the necessary majority. Great interest was felt in the election. Even M. Berthelot, the present Minister of Public Instruction, had left the ministerial palace, and sat in his seat, whence he recorded his vote like a simple Academician.

ABORTION FOLLOWING THE USE OF PERMANGANATE OF POTASSIUM.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—I was called February 25 to see Mrs. B., aged about 35. She said at her last menstrual period she had flowed only two days, and since then had not felt her usual self. It was time for to be unwell again. A day before she got wet. She was positive that she was not pregnant. She suffered with intense headache, backache, and soreness, slight elevation of temperature, and vomiting.

I gave her morphine for the headache and aconite, not having any permanganate with me. The next day she was somewhat better, and I then left her eight 2-grain capsules of

permanganate of potassium, one to be taken three times a day. The first one she vomited, the second and others were retained with difficulty and only by drinking freely of water.

The next day she began to flow, and flowed very freely that night. I saw her the next day.

The cervix uteri was well dilated and something protruding, which was thoroughly removed, and found to be a foetus a month old. Recovery good.

Although Merrill and Ringer said the permanganate had no action on a gravid uterus, this is not the first case of abortion following its use.

S. B. SPERRY, M.D.

DELAFIELD, WIS.

URTICARIA FROM INDIGESTION.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—Dr. R. L. Hutton, of Prescott, Ark., has a communication in the THERAPEUTIC GAZETTE for March relative to urticaria due to indigestion, which is answered and commented upon by the editors. My experience in this difficulty coincides with the expressed views of the editors of the THERAPEUTIC GAZETTE, and is unlike that of Dr. Hutton, so far as regards his statement that the disorder is confined to the male sex of middle age. I have found that women, without regard to age, are as liable to be attacked as men. Indeed, I am quite positive I have treated more women than men for this difficulty, nor have I had occasion to notice that it is confined to those individuals of a gouty diathesis, who as stated by the editors of the GAZETTE are most likely to suffer. I have a patient at this present writing, whose sudden, distressing, and unexpected, though, fortunately, infrequent attacks, present some interesting features. The patient is a young married woman, aged 23 years. Generally speaking is a healthy, but not robust, woman. Has no history of gout, and is by no means a chronic dyspeptic. At irregular intervals of from two to six months, about an hour following a usual meal, she will be suddenly and without warning attacked with distressing dyspnoea and marked asthmatic symptoms, so that the first time I was called to her I was misled in believing it to be a genuine case of asthma. Within half an hour there is felt a general benumbed sensation over the entire surface of the body, and within a few minutes the urticaria makes its appearance in large elevated irregular blotches

in different parts of the body, showing itself in successive crops. It arises almost instantaneously, first in one place then in another, over the limbs and trunk. The itching is simply unendurable, and the inclination to scratch irresistible. This patient, though exceedingly modest and ladylike, during this stage of the attack became thoroughly indifferent as to position, posture, or exposure of person in order to scratch any offending portion. Is utterly unable to keep quiet in any position an instant, and in every way shows acute suffering. How long this stage would continue is doubtful, but I have always been able to relieve her distressing condition by a prompt emetic. The contents of the stomach vomited is undigested food in large quantities. As soon as emesis is procured, the symptoms and urticaria disappear almost instantly, and five minutes later the patient is perfectly well, without an unpleasant sensation or a sign of the eruption.

H. D. THOMASON, M.D.

ALBION, MICH.

THE USE OF GALVANISM IN THE TREATMENT OF INDOLENT ULCERS.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—I want to say a few words here about a case that my father, Dr. J. Z. Scott, of this place, has been treating during the past winter. It was a case of indolent ulcer, whose history dated back over fifteen years. At the commencement there was a periostitis, which resulted in destruction of tissue, and finally ulceration, and sequestra of bone were thrown out at different times, until finally it seems all the dead bone was thrown off; at least no dead bone or signs of such could be discovered by the usual exploratory methods.

But the general health of the young man, who was about 20 years old, was impaired, and a condition of the body obtained that seemed to encourage a kind of chronic ulceration process. He had been treated by several reputable physicians before he called upon my father, but had not been benefited much.

When my father saw him first, the ulcer, which was situated an inch above the internal malleolus, extending across the leg transversely to the subcutaneous border of the tibia, and internally about two inches, was painful and very tender, but was indolent as to its general characteristics.

The boy could not sleep much at night on

account of the severe pain. He was placed on an emulsion of cod-liver oil, syr. hypophosphites, lime and soda, and pancreatic emulsion, in this formula:

R Cod-liver oil, ℥iv;
Pancreatic emulsion, ℥ss;
Syr. hypophosphites lime and soda, q.s. ℥vi. M.
Ft. emulsion.

Sig.—A tablespoonful two hours after each meal, and a pill of iron, quinine, and arsenic, with co. ex. of colocynth, as follows:

R Acid. arsenic. gr. i;
Ferri subcarb., gr. xxx;
Ex. colocynth. co., gr. xx;
Pulvis piper. nig., gr. xl;
Ex. taraxacum, gr. xxx. M.
Ft. pil. No. 40 in caps.
Sig.—Take one each night.

He used as a local application iodoform ung. and eucalyptus ung., and strapped the parts well with adhesive plaster. He kept up this treatment for several weeks, but never obtained relief until he commenced the use of the galvanic battery. The secretions of the ulcer were noticed to be alkaline, and the negative pole was placed to the ulcer, the positive at some indifferent point, and six cells were taken into the circuit; the séance was prolonged about ten minutes. From that time the ulcer began to get well, and a half-dozen applications ended the case.

He applied the bare silver plate of the negative electrode of the McIntosh galvanic battery directly to the diseased surface. The other treatment was also persevered in. The general health of the young man was improved all the time, but the ulcer never began to undergo healthy changes until the galvanic current was applied to its bare surface.

My father says he is satisfied that it is a useful weapon with which to combat disease of this sort when used intelligently.

FRANK M. SCOTT, M.D.

SCANDIA, KANSAS, March 21, 1887.

Notes and Queries.

THE TREATMENT OF PLACENTA PRÆVIA.

The treatment of placenta prævia is a matter of such importance and obscured by so much diversity of opinion, that we reproduce in full the editorials that appeared on this subject in the *Lancet* for February 25 and March 5, 1887.

Of all the complications of labor, none is more urgent and more serious than hemor-

rhage; and of the causes of hemorrhage none is more important than placenta prævia. The earliest mention of the condition is to be found in the works of Guillemau, in A.D. 1609; and next in those of Mauriceau, A.D. 1668. Their view was that the after-birth was originally situated higher up, but became displaced as pregnancy proceeded, a view which is still extant in the phrase popular among the lower classes and midwives,—“the after-birth slipped.” The correct view, that the after-birth is firmly planted in its dangerous position, was first illustrated by the necropsy of a woman who died of placenta prævia, and was dissected by Schaller in A.D. 1709; and this view was first introduced into the text-books by Johann van Hoorn, A.D. 1715, a pupil of Portal. Van Hoorn plainly says that the cause of the dangerous condition is the after-birth, which at the beginning of pregnancy takes its place on or above the os uteri. After Leveret's time the main facts with regard to placenta prævia are found generally current.

To write a historical review of the subject from that time to this would consume too much of our space; moreover, it would show occasional retrogressions in knowledge and understanding. At the present time our knowledge, which not many years ago was thought to be pretty complete, has been somewhat disturbed by the study of the “lower uterine segment,” to which a great impulse was given by the suggestive studies of Ludwig Bandl on uterine rupture, pursued by him in search of the explanation of many other problems. Bandl's views, which need not here be given at length, were many times modified by their author, but the result of the discussion and observations which they have excited has been to show that during labor the uterine body becomes differentiated into a retracting and ever-thickening fundus, a stretching and ever-thinning “lowest uterine segment,” and the cervix. It is not yet, however, finally settled what is cervix and what is “lower uterine segment.” The lowest part of the retracted fundus is felt after labor as the bottom of the hard uterine cricket-ball; below it come the cervix and “lower uterine segment,” hanging loose, apparently unretracted and passive, like a piece of flabby hose. The question is not yet settled why, if this lower uterine segment is the site of placenta prævia, any woman escapes flooding to death after this complication. Meanwhile it is possible that, though it feels flabby, it may be physiologically retracted to an extent suffi-

cient to control hemorrhage. Having said thus much, we will proceed to be more dogmatic.

And first we would say that the utterances of the text-books on this great subject are most unsatisfactory, being overloaded with detail both as to pathology and treatment, and generally “hedging” each statement with a timidity and uncertainty which appears in the answers of students in examination, and in the treatment of practitioners. It would be worth all the writing which occupies so many pages, and leaves us at the end as uncertain as to the author's views as we were at the beginning, to enunciate a few great propositions, and to get them well absorbed by those whom we have to teach. We will give some of them:

1. The bleeding comes from the placental site.
2. The cause of the bleeding is the detachment of the placenta.
3. The cause of the detachment of the placenta is the expansion of the lower uterine segment, which the placenta is unable to follow.

This will be seen to be equivalent to saying that before labor there is no bleeding. This is generally, but not always, true. We are obliged, therefore, to remark that the beginning of labor is not always synchronous with the beginning of the “first stage” of labor, but begins with the dilatation of the os internum, which may precede the “first stage” by days or even weeks. Also that the bleeding in placenta prævia is often due to the same causes as operate in “accidental hemorrhage,” acting, indeed, with additional advantage on account of the low site of the placenta and the consequently heavier column of blood which the utero-placental vessels have to support under these conditions.

Having plainly stated the main great facts, which are worth all the rest put together, and which should be always taught dogmatically and almost like aphorisms, we now proceed to the question of treatment, for a plain statement of which the student looks in vain in even the most recent text-books, and which seems to us capable of at least an attempt at formulation. We would first remark that a certain number of cases of placenta prævia progress favorably to a safe termination, and require no interference. This is, of course, more likely when only part of the placenta is situated on the area of necessary detachment, but it is not unknown where the placenta is central,—that is, implanted across

the os internum. In such cases the child has been known to be born by strong contractions, wearing the placenta like a cap on its head. On this the well-known treatment of Simpson—the complete detachment of the placenta by the hand,—and its modification by Barnes—partial detachment,—were founded. It is to be remarked that Simpson's treatment was founded on an interpretation of the phenomenon which implied that the woman was delivered safely because the placenta was detached, whereas in our opinion such cases only show that the uterus acted with unusual vigor, shortening the dangerous period and producing good retraction, which, as is well known, is the only safeguard against bleeding. Detachment of the placenta apart from vigorous uterine action is only an increased element of danger. But most cases of placenta prævia do require prompt and wise interference, and to wait for their spontaneous termination would be as wrong as to wait for some form of spontaneous explosion or evolution in a cross-birth. Treatment, to be rational, must be founded on the pathology and natural history of diseases; in other words, it must take cognizance of the causes of death with a view to avoiding them, and of the manner in which nature deals with them when she does so successfully. We come, therefore, to enunciate two more great principles:

4. The great dangers of placenta prævia are: (a) bleeding before and during labor; (b) bleeding after delivery; (c) septic processes.

5. The great safeguard against bleeding before, during, and after delivery is uterine retraction.

We come, therefore, to consider how the dangers arise, how they may be avoided, and how retraction may be secured.

The cause of bleeding before and during delivery has already been touched on. It is detachment of the placenta by dilatation of the placental site. The causes of bleeding after delivery are mainly two,—imperfect retraction, and laceration of the cervix and lower uterine segment, which is, of course, unusually vascular. This also predisposes to sepsis. The causes of sepsis are three,—the low situation of the placental site, bringing it nearer to the outer world and nearer to the accoucheur's fingers, lacerations, and perhaps also imperfect retraction of the lower uterine segment. The great object, therefore, with a view to avoiding and controlling hemorrhage, has been to produce uterine contraction and retraction; and to do this directions have been

given to empty the uterus as soon as possible. The condition of the cervix, which, though soft, is often loath to dilate (probably in connection with the abnormal position of the placenta, which disorders the polarity), has rendered it impossible in many cases to effect this without forced delivery (*accouchement forcé*), which consists in thrusting in the hand and dragging out the foetus by the feet. This is a most dangerous proceeding, and generally takes the practitioner out of the frying-pan of ante-partum hemorrhage into the fire of laceration, post-partum hemorrhage, and blood-poisoning.

Delivery by the head is not suitable for cases of dangerous placenta prævia. No aid can be given till the labor is so far advanced as to be practically over so far as the danger of bleeding is concerned. A sixth proposition may now be enunciated:

6. The great treatment for placenta prævia is turning by the feet.

Our readers will perhaps say, "and extraction." But here we must make another statement, namely, that this is usually unnecessary.

7. It is found practically that as soon as turning has been effected and the leg brought down the bleeding ceases.

The explanation usually given for this is that the presenting part plugs the bleeding site; but it is not certain whether this explanation is correct, or whether the arrest of bleeding is not rather due to the retraction which partial emptying of the uterus effects. It follows, therefore, that—

8. After the leg is brought down, the case may generally be left to nature.

We come now to some points in the history of that condition. Internal version requires dilatation of the cervix to an extent implying that labor has advanced to a considerable degree of progress. To wait for this is often impossible, and *accouchement forcé* (forced delivery) was formerly the only alternative.

The first great advance was made in 1860 by Dr. Braxton Hicks, who showed the possibility of turning by the bipolar method when the cervix would admit two fingers, or even one. He expressly pointed out the advantages of early version by this method in placenta prævia, and published a series of cases to illustrate his point. Our Teutonic brethren seem to have read his publications (which are plain enough) without understanding, for the greatest German accoucheurs, Von Hecker and Spiegelberg, opposed and derided bipolar version, but showed that they failed to comprehend it. In the mean while

various methods of treatment were proposed and partly adopted, and Hicks's method seems to have been practically unknown in France and America. Twenty-two years after its publication a serious trial of early bipolar version was made by Hofmeier, a year later by Behm, and a year later by Lomer, all in Berlin. It was then found that the method which an English accoucheur had described and practised in 1860 required twenty-two years and a foreigner to bring it into vogue.

These accoucheurs treated two hundred and thirty-six cases with eight maternal deaths, a mortality of 3.3 per cent. Behm delivered fifty-eight cases consecutively, without a single maternal death. It must be remarked that Hofmeier and Behm treated all their patients themselves, whereas Lomer's cases were treated by nine different assistants. The presence of a skilled operator must of course be discounted in comparing ancient with modern methods, and so must the use of antiseptics. Still, it may be safely said that, after all due allowance is made, the above results have never been nearly reached. The reduction of mortality may be stated as from twenty-four per cent. to three per cent. The method may be described as—*a*. Bipolar podalic version as early as possible. *b*. Extraction by natural forces, or after complete spontaneous dilatation.

It is found, as said above, that the bleeding practically ceases after version and before extraction. As regards the life of the child, delay does not, according to statistics, much impair its chances, which are always bad; and, on the other hand, the great danger of laceration and fatal hemorrhage from it is set aside, while a fertile source of sepsis is also avoided. Other methods are still mentioned in text-books: complete or partial separation of the placenta, rupture of the membranes, and plugging. Rupture of the membranes and evacuation of the liquor amnii is often impossible when the placenta is completely prævia; the other methods have no such brilliant results, and must predispose to sepsis by the fingering of the placental site, and the retention of clots near it which they entail.

In France the use of the plug still holds its own, and the statistics have certainly improved since the introduction of antiseptics. Still, it can show no results like the above, and should not, in our opinion, be the routine practice among medical men. It must, however, be remembered that placenta prævia is one of the conditions which midwives often have to treat, at least temporarily in the ab-

sence of the doctor, and that unless these cases are treated properly they die. It is obviously impossible to intrust midwives, on the other hand, with so delicate an operation as bipolar version. For midwives the best treatment will certainly be to plug tightly with antiseptic precautions, washing out the vagina, and plugging, if possible through a speculum, with cotton-wool or gauze rendered aseptic. There is nothing better for plugging than a bandage of corrosive sublimate gauze. The plug excites contractions, controls hemorrhage to a considerable extent (for concealed hemorrhage in placenta prævia is almost unknown), and preserves the membranes for turning by the accoucheur.

In summing up the question of treatment, it must be remembered that cases divide themselves into two principal classes: The first, in which the uterus, so to say, takes matters into its own hands and acts powerfully; in these cases, to temporize and assist labor, as by forceps or rupture of the membranes if they present, will often be sufficient. The second, in which the labor is disordered, the uterus demoralized, and, unless prompt and skilful help is at hand, the tendency is to rapid death. It is these cases about which there should be no two minds with regard to treatment, and it seems to be proved that it may be summed up as (*a*) bipolar version as early as possible, (*b*) extraction actually or practically left to nature.

There is yet a third class of cases, namely, that in which the patient is either moribund or in extreme and urgent peril from flooding, and in which forced delivery by manual dilatation affords the only chance. These cases are exceptional, and it is hardly necessary to add that the operation should be performed with all possible skill and gentleness.

There are several morals to be deduced from the history of placenta prævia. Firstly, the new is not always the true, nor the truth new. The latest improvement may be a retrograde movement, and the "greatest modern triumph" a thing of which the not remote future will be ashamed. We need not illustrate this maxim here; it is a text on which we have preached and shall preach again. To the reader we need only say, in the language of Sir Christopher Wren's epitaph (slightly altered), "*Si documentum requiris, circumspecte.*" The verdict of the day is often wrong; each must make up his mind as to what is bad and false and what is good and true. To follow fashion may entail forty (or twenty-two) years' wandering in the wilder-

ness, till it takes a foreigner to conduct us into the promised land. Secondly, it seems possible that even the most intelligent foreigners may fail to understand plain English and decry a practice which they fail to comprehend. In this instance it took twenty-two years for them to comprehend it. Thirdly, English practice is not always the worst, even if unacceptable on the Continent.

It will be seen that the best modern practice agrees with Dr. Braxton Hicks's recommendations in 1860, and that though some of the facts in the pathology of placenta prævia (such as the arrest of hemorrhage after turning and before extraction) were unknown to him at that time, as well as to his contemporaries, his name deserves a prominent place in the history of the affection.

A CASE OF POISONING BY DUBOISINE.

As cases of poisoning by duboisine are somewhat rare, we reproduce the following report by MR. CHARLES M. CHADWICK in the *British Medical Journal* for February 12, 1887 :

On July 13, at 11 A.M., H. J. H., aged 75, consulted Mr. T. Pridgin Teale with reference to his eyes. H. J. H. is suffering from slow-forming senile cataract, and on several occasions atropine has been used for purposes of examination. On this occasion, however, two disks, each containing $\frac{1}{100}$ of a grain of sulphate of duboisine, were placed in the eyes. Very shortly afterwards, patient complained of slight giddiness, became very fidgety, and was advised to remain sitting. In about twenty minutes, the pupils being fairly but not fully dilated, the necessary examination took place, H. J. H. standing during the proceeding. A few minutes later, he experienced a decided feeling of weakness and loss of control over the legs, great dryness of mouth, with exceedingly bitter taste. Fancying, however, the fresh air would do him good, he refused to remain, and elected to walk home. He had not gone far before it was evident that persons in the street regarded him as decidedly "under the influence of liquor;" his speech became husky and indistinct; he walked, talked, and behaved like one slightly intoxicated. Later, when at home, the symptoms progressed; complete inability to stand without assistance, or to recognize the position of objects, partly due, no doubt, to paralysis of accommodation, but also due to visual hallucination. For example, the patient would suddenly sit on the ground, imagining a chair was ready to receive him; drop a glass in

mid-air instead of placing it on the table; and grasp in the air above his head for his watch which had been taken from him. With difficulty he was got to bed, constant attendance being necessary to keep him quiet; there was incessant movement, with carphology, a suspicious way of glancing beneath the bed-clothes and behind the back. A few moments, when left to himself, sufficed for the whole room to be upset; towels, brushes, and shoes were placed in the bed, and boots on the dressing-table; this entertainment ended by a somewhat severe fall on the floor, whence he was unable to raise himself without assistance.

This incessant activity was accompanied by a flow of words, sentences strung together without any apparent connection, a return of memory to things which happened years ago; throughout, an air of fun and humor, the symptoms those of childishness rather than any attempt at violence.

The pulse was slow; the patient, entirely ignorant of what was the matter with him, imagined it was quite dark, whereas it was a bright summer afternoon. Four hours after the commencement, a small injection of morphine was given, and the patient became quieter, dozing apparently for a few seconds at a time. Three hours later he obtained an hour's quiet sleep, and, after some light nourishment, three hours' sleep, after which his mind appeared quite clear again. He was entirely unconscious of all that had passed; a feeling of weight in the head and general upset lasted for several days. The urine, before and after, was normal. The thoughts which such a case as this gives rise to are shortly these: It is known that children bear belladonna better than adults. Do advancing years gradually increase the susceptibility? Eight cases reported by Mr. Nettleship in 1879 would appear to indicate this. Secondly, was the poison absorbed entirely by the conjunctival mucous membrane? The bitter taste in the mouth might possibly be due to a referred sensation. Thirdly, does this susceptibility in old age point to an unpronounced pathological condition, which is liable to result, after a time, in that condition of atrophy and degeneration which is popularly known as "softening of the brain"? And, fourthly, does belladonna-poisoning, which resembles so closely acute alcoholism and post-epileptic delirium in most of its symptoms, ever give rise to those outbursts of violence,—so frequently destructive to life, and so invariably succeeded by entire ignorance of a deed, perhaps of the ghastliest de-

scription,—which render the medico-legal aspect of many so-called criminal cases so profoundly interesting?

POISONING BY HERRING-ROE.

In *La France Médicale* a case is related in which a man was poisoned by eating three hard-roed herrings. The symptoms were a feeling of oppression, vomiting, burning sensation in the œsophagus and stomach, very violent abdominal pains, and dysentery. The attack lasted about forty-eight hours, and could be traced only to the herrings. Cases of this kind are by no means rare. It has long been known that caviare (sturgeon-roe), and the ova of pike, barbel, perch, and other fish, have frequently given rise to symptoms of poisoning in Russia. M. Goertz, a Russian physician, treated three cases of this kind in one family; the patients had eaten hard roe, while the other members of the family who ate the soft roe experienced no inconvenience. Dr. Münchemeier, of Munich, in 1875 reported three cases of poisoning after eating barbel-roe. These cases, which were very severe, were treated with ice and tincture of opium and saffron. Professor Naunyn reported a similar case in Berlin in 1884. Among the numerous cases reported in Russia, herrings appear to have been the cause in only one. According to Huselmann, accidents of this nature, due to caviare of bad quality, are frequent and sometimes fatal among the poorer classes in Russia. It is impossible, according to him, to say exactly what the poisonous element is, and in these cases, as in poisoning by mussels, oysters, and other fish, the idiosyncrasy of the individual must be taken into account.—*The British Medical Journal*, February 12, 1887.

CONVULSIONS FROM IMPACTED FÆCES IN A YOUNG CHILD.

DR. G. W. SQUIRES, of East Avon, N. Y., writes as follows (*The Medical Record*, February 26, 1887):

On the 15th I was hastily summoned to see a little girl 11 months old, who, the messenger said, was dying in a fit. On my arrival I found the child just recovered from a convulsion, but there was twitching of the muscles and every indication of more convulsions. The thumbs were flexed in the palms; the eyes were wild and squinting. Upon examination I found the abdomen greatly distended, with hard, knotty-looking lumps,

which were readily recognized as being in the bowels. The mother made the remark that the child had been "terribly constipated;" that she had given her as much as three teaspoonfuls of castor oil without a movement of the bowels; that she had been in the habit of feeding her on potatoes, cabbage, bread, and, in fact, everything she ate herself. Every few minutes the child would cry out and bend almost double. I at once ordered an injection of warm water and Castile soap, and in ten minutes the bowels moved, bringing away a great quantity of hardened scybala the size of hickory-nuts. The child immediately felt relieved, and soon went to sleep. At the end of an hour she started up with another violent griping pain. Another injection was immediately given, bringing away more fæces covered with mucus. A few grains of comp. licorice powder was given, and the injections were repeated seven times, each time bringing away less hardened dejections, until the last was of quite natural consistency. The fever-thirst and convulsive symptoms disappeared as if by magic, the child asked for playthings, and was more bright and cheerful than it had been for weeks. The mother told me that the night before the convulsion the child had a severe attack of croup, which was undoubtedly of reflex origin. J.

NEW REACTIONS FOR KAIRIN, ANTI-PYRIN, AND ANTIFEBRIN.

KOHN, in *Rundschau* (Prag), gives some new reactions for kairin, antipyrin, and antifebrin. A few drops of solution of chloride of iron added to a dilute aqueous solution of kairin produces a violet color, which suddenly changes to brown.

Antipyrin.—1. Chloride of iron changes an aqueous solution, 1 to 100,000, to red. 2. A solution 1 to 100,000 turns blue-green when nitrous acid is added. Concentrated solutions furnish green crystals.

Antifebrin.—This gives no reaction with reagents mentioned. It is decomposed by boiling with solution of potassium, is tested for anilin, and after distilling this off is tested for acetate of potassium.—*National Druggist*, March 4, 1887.

THE attention of readers of Dr. Wood's article "On Bergeon's Method of Treating Phthisis" is directed to the advertisements of Whitall, Tatum & Co. and J. W. Queen & Co. We believe the apparatus made by either of these firms will be found to be satisfactory.

— T H E — Therapeutic Gazette.

Whole Series,
Vol. XI.

Detroit, May 16, 1887.

Third Series,
Vol. III. No. 5.

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Original Communications.

THE MODERN ANTIPYRETICS.*

BY PETER J. MARTIN, M.D., EASTON, PA.
(From the private laboratory of Dr. Ott.)

THE modern antipyretics are kairin, thallin, antipyrin, hydrochinon, and antifebrin. In this paper I shall consider all except the last. Kairin is obtained from chinolin by a process of hydration, oxidation, and substitution. Thallin was discovered by Skrap, of

Vienna, and so named because the salts of hydroparachin anisol ($C_{10}H_{15}NO$) were colored green by ferric chloride. Antipyrin belongs to a series of bodies (according to Dr. Knorr, of Erlangen) which he calls quinizine or dimethyloxy-quinizine.

In making these experiments it was the aim to determine how the antipyretics acted upon the phenomena of fever, whether through increased heat-dissipation or through lessened production. Hydrochinon, one of the drugs used, being comparatively a new antipyretic and not having been investigated to any extent, was first tried. Some experiments upon the lower animals were made to determine more accurately its general action before calorimetrical investigations were begun.

* This thesis was awarded one-half of the "Medical News Prize," of the University of Pennsylvania, 1887.

NERVOUS SYSTEM.

Experiment 1.—3.30 P.M., a medium-sized frog received subcutaneously .008 gramme in powder form. 3.46 P.M., some slight convulsive movements. 3.45 P.M., convulsions have become marked; they gradually extended over the whole body; animal is unable to move; loss of power in the anterior extremities, followed soon by loss of motion in posterior extremities; lies flat on abdomen, with the anterior extremities doubled under him, the posterior extended. 4.15 P.M., chest opened; heart beating normally. Twitching of muscles continued for some time after the animal was apparently dead.

Experiment 2.—3 P.M., frog received .004 gramme of hydrochinon subcutaneously. 3.05 P.M., signs of weakness in the posterior extremities; slight convulsive movements. 3.07 P.M., loss of power in the anterior extremities. 3.08 P.M., marked convulsions. 3.25 P.M., chest opened; heart beating 50 per minute.

Experiment 3.—Small frog; had left leg ligatured, leaving sciatic free, which was kept moist. 2.20 P.M., injected subcutaneously .015 gramme of hydrochinon. 2.22 P.M., convulsions very marked. 2.23 P.M., respiration and convulsions have disappeared; chest opened; heart beating 48 per minute.

Experiment 4.—Frog received at 2.53 P.M. .0005 gramme; no effect. 3 P.M., .0015 gramme injected. 3.05 P.M., some convulsive movements, especially when touched or disturbed in any way; frog recovered from the effect of the drug after a short time. 3.32 P.M., injected .008 gramme of hydrochinon. 3.35 P.M., convulsive movements and partial loss of power in the anterior extremities. 3.38 P.M., convulsions very marked. 4.10 P.M., chest opened; heart beating 36 per minute.

Experiment 5.—Frog; had left leg ligatured, excepting the sciatic nerve. 1 P.M., injected .012 gramme of hydrochinon. 1.05 P.M., convulsions present; loss of power over anterior extremities. 1.12 P.M., same amount of anæsthesia in both posterior extremities; sulphuric acid when applied does not cause reflex movements. 1.15 P.M., spinal cord divided at the medulla oblongata; convulsions still continued. 1.40 P.M., convulsions ceased; animal dead.

These experiments seem to show that small doses of hydrochinon produce convulsions and loss of power, which takes place first in the anterior extremities. The heart is not much affected. The convulsions are not cerebral, as they continue after section of the cord. The

want of sensibility is not due to any action upon the peripheral endings of the sensory nerves, but is caused by a central change.

Experiment 6.—Frog; had his left leg ligated, excluding the sciatic. 10.10 A.M., injected .02 gramme of hydrochinon subcutaneously. 10.14 A.M., convulsions; loss of power takes place first in the anterior extremities; tries to jump away, but only shoves himself a few inches on his abdomen; later on is unable to move; complete loss of power. 10.35 A.M., electric stimulus applied to the unprotected foot causes a very slight contraction of it, while in the protected foot there is a marked contraction. The muscle in the poisoned leg loses its irritability quicker than in the protected leg.

Experiment 7.—Large frog; had all the tissues of the left leg ligated, excluding the sciatic. 1.20 P.M., injection of .05 gramme of hydrochinon. 1.23 P.M., loss of power in the anterior extremities; violent convulsions and then complete loss of power; lies flat on abdomen; posterior extremities extended; the toes of the anterior extremities double under. 1.30 P.M., electrodes applied to the protected extremity cause marked contraction of the muscles; in the poisoned extremity the contractions were more feeble. Irritation of the poisoned foot caused no contraction in the protected leg, neither did irritation of any part of the body. 2 P.M., muscular contraction in protected extremity ensued with DuBois coil at 21 centimetres, while in poisoned leg it took place at 12 centimetres. Irritation of either sciatic caused muscular contraction.

Experiment 8.—Large frog; had tissues of left leg ligated, excluding the sciatic. 9.30 A.M., injected subcutaneously .07 gramme of hydrochinon. 9.33 A.M., convulsions; loss of power in the extremities. 9.35 A.M., complete loss of power. 9.40 A.M., protected leg responds to electrical stimulus; both nerve and muscle being more irritable than the poisoned extremity. 9.55 A.M., right leg irritable with DuBois coil at 8; left leg irritable with DuBois coil at 15; nerve in right leg responds at 18, while left leg acts at 26. Pinching does not cause reflex movements in either posterior extremities.

Experiment 9.—Large frog, 2.37 P.M., received under the skin .12 gramme of hydrochinon. 2.39 P.M., loss of power; convulsions. 2.40 P.M., sciatic of right leg divided; the twitchings in the leg were arrested. The nerve and muscle of the left leg were tested by DuBois inductorium.

Time.	Nerve.	Muscle.
2.55 P.M.	30	14
3.10 "	30	13
3.25 "	30	12
3.40 "	30	8

If the frog was struck with the handle of the scalpel, it produced muscular twitchings. 3.55 P.M., the spinal cord was destroyed by a thrust, but striking frog afterwards produced no muscular twitchings.

These experiments demonstrate that while the muscular irritability decreases, that of the nerve does not. The convulsions are not due to any action of the drug upon the muscle.

Experiment 10.—Large frog, at 3.58 P.M., received subcutaneously .01 gramme of hydrochinon. 4.1 P.M., violent convulsions. 4.5 P.M., destroyed the spinal cord; the convulsions immediately ceased.

Experiments 5 and 10 show that the convulsions are due to an action upon the spinal cord.

REFLEX ACTION.

Experiment 11.—Cerebrum of the frog was ablated. Reflex action was tested by water slightly acidulated with sulphuric acid. The time the leg remained in the water was noted with a metronome beating 100 per minute.

Time. P.M.	Metronome beats.
2.01.	12
2.03. Injected .002 gramme of hydrochinon.	
2.06.	8
2.09.	10
2.12.	10
2.15.	12
2.21.	23
2.27.	34
2.33. Injected .002 gramme of hydrochinon. Convulsive movement.	
2.36.	30
2.39.	28
2.43. Did not respond.	

Experiment 14.—Medium-sized frog; spinal cord divided at junction with the medulla oblongata.

Time. P.M.	Metronome beats.
2.03.	12
2.05. Injected .002 gramme of hydrochinon.	
2.06.	8
2.09.	12
2.17. Touch produced convulsions.....	12
2.20.	18
2.26.	18
2.35. Did not respond.	

Experiment 15.—Conditions same as in Experiment 14.

Time. P.M.	Metronome beats.
2.07. Cord divided.	
2.38.	8
2.39. Injected .002 gramme of hydrochinon.	
2.52.	10
2.55.	6
2.58.	14
3.00.	20
3.06.	35
3.12. Did not respond.	

Experiment 16.—Cerebrum ablated in a frog.

Time. P.M.	Metronome beats.
2.05.	9
2.07. Injected .002 gramme of hydrochinon.	
2.13. Convulsions.....	20
2.15. Did not respond.	

Experiment 17.—Frog; condition same as in preceding experiment.

Time. P.M.	Metronome beats.
2.31.	8
2.32. Injected .002 gramme of hydrochinon.	
2.42.	20
2.48. Did not respond.	

These experiments go to prove that hydrochinon lessens reflex activity by an action on the spinal cord, for the same results ensue after removal of Setschenow's moderating centres.

ACTION ON VOLUNTARY MUSCLE.

Experiment 18.—Frog received subcutaneously .004 gramme of hydrochinon at 2.20 P.M. 2.26 P.M., convulsive movements; spinal cord and brain destroyed. 2.30 P.M., gastrocnemius attached to lever of Marey's myograph, the load being ten grammes. The muscle was directly irritated by electrical stimulus, and the curves were registered on the smoked drum of a Marey-Foucault regulator. The time of contraction was noted by a tuning-fork registering 240 vibrations per second. Several experiments showed a slight prolongation of the muscle-curve.

CIRCULATION.

Experiment 18.—Frog; chest opened.

Time. P.M.	Heart-beats per minute.
2.14. Injected .001 gramme of hydrochinon	26
2.25.	20
2.29.	17
2.32.	14
2.35.	11
2.41.	10
2.50.	9
3.50.	7

Experiment 19.—Frog received .0015 gramme of atropin subcutaneously.

Time. P.M.	Heart-beats per minute.
1.59.	20
2.00. Injected .01 gramme of hydrochinon.	
2.10.	20
2.15.	18
2.20.	18
2.35.	16
2.45. Acting feebly.....	14
3.45.	14

These experiments, with several others, proved that hydrochinon affects the heart by lessening the number of beats ; also the force of the heart. Injection of atropin does not alter the results.

Experiment 20.—Cat etherized ; carotid and jugular prepared. Ludwig's kymographion used.

Time. P.M.	Pulse.	Pressure.	Remarks.
2.0	57	96	
2.0.15	49	102	Injection of .004 gramme of hydrochinon.
2.0.30	51	108	
2.1	46	112	
2.2	55	108	
2.5.30	59	152	
2.6	62	142	
2.8.45	57	144	Animal killed.

Experiment 21.—Cat etherized ; conditions same as in preceding experiment.

Time. P.M.	Pulse.	Pressure.	Remarks
2.14.45	56	78	
2.15.45	57	77	Injected .004 gramme of hydrochinon.
2.16.45	63	98	
2.17.30	55	102	
2.22.0	59	96	Injected .004 gramme.
2.22.45	54	100	
2.27.45	54	96	
2.28.0	63	94	Injected .016 gramme.
2.28.30	56	112	
2.29.15	60	120	
2.58.30	62	86	Animal killed.

Experiment 22.—Cat etherized ; vagi divided.

Time. P.M.	Pulse.	Pressure.	Remarks
2.0.0	62	128	
2.0.15	66	130	Injected .008 gramme of hydrochinon.
2.0.30	59	122	
2.0.45	64	124	
2.37	56	38	Animal killed.

The depression of pulse that ensues takes place either with or without the presence of the central cardio-inhibition, according to the preceding experiments.

Experiment 23.—Cat etherized.

Time. P.M.	Pulse.	Pressure.	Remarks.
1.11.30	41	94	
1.11.45	42	98	Injection of .01 gramme of hydrochinon.
1.12	44	102	
1.15.15	43	78	Injection of .02 gramme.
1.15.45	42	80	
1.16	43	106	Animal struggling.
1.30.15	52	88	
1.31	45	90	.02 gramme.
1.31.15	50	120	
1.45	50	78	
1.45.15	51	70	.01 gramme.
1.45.30	54	96	
1.57.30	50	80	.01 gramme.
2.15	51	60	
2.25	49	92	

Experiment 24.—Cat etherized. Injected .012 gramme of atropin at 2.10 P.M.

Time. P.M.	Pulse.	Pressure.	Remarks.
2.20.15	73	86	
2.20.30	69	104	.03 gramme of hydrochinon.
2.21.45	68	100	
2.23.15	68	120	
3.03.45	72	86	
3.07.15	67	62	Injected .04 gramme of hydrochinon.
3.07.30	68	68	
3.31.45	73	64	
3.45	...	...	.04 gramme of hydrochinon.
4.01.15	77	70	Animal killed.

The preceding experiments prove that small doses in the cat increase the arterial tension and do not affect the pulse. Large doses increase the pulse and pressure, followed by a depression of both. After paralysis by atropin of the vagi, the pulse rises and subsequently falls as before, showing that peripheral cardio-inhibitory action is not affected.

Experiment 25.—Large cat ; all the cardiac nerves in the neck divided ; cord divided at the atlas verified by a post-mortem, tracheotomy, and artificial respiration.

Time. P.M.	Pulse.	Pressure.	Remarks.
2.30.30	60	98	
2.30.45	62	100	.04 gramme.
2.31	68	98	
2.32	65	100	Injected .04 gramme.
2.32.15	64	108	
2.32.45	64	100	
2.34.15	...	98	

This experiment shows that hydrochinon only slightly increases the pressure, which increase lasts only a short period. The conclusion follows that the rise and fall of pressure are due to the action of the drug upon the main vaso-motor centre and the heart.

RESPIRATION.

Experiment 26.—Rabbit; tracheal canula attached to Marey's polygraph; jugular prepared.

Time. P.M.	Respiration.	Remarks.
1.51	19	
1.51.15	39	.02 gramme of hydrochinon.
1.51.30	34	
2	52	
2.05.30	55	
2.21.30	50	
2.25	43	.04 gramme of hydrochinon.
2.25.15	52	
2.30.15	86	
2.31.30	82	
2.45	60	.06 gramme hydrochinon.
2.45.15	78	
3.11.15	66	

Experiment 27.—Rabbit; vagi cut.

Time. P.M.	Respiration.	Remarks.
2.21.15	6	
2.22	9	.02 gramme of hydrochinon.
2.22.15	25	
2.22.10	20	Struggling.
2.36.15	10	
2.50	6	
2.50.15	9	.02 gramme.
2.50.30	23	
2.55	13	.02 gramme.
2.55.15	27	Struggling.
2.30.45	6	Animal killed.

These experiments show that hydrochinon increases the respiratory movements. Section of the vagi does not alter the result. The increase of respiratory action is due to an excitation of the respiratory centres.

CALORIMETRICAL EXPERIMENTS.

In the following experiments the skull of the animal was trephined in the median line from a point back of the posterior angle of the eye. The animal was firmly secured, so as to avoid the possibility of making a large lesion through the slipping of the trephine. A puncture was then made with a small spear-pointed instrument, whose point was two millimetres in width and the body of the instrument one millimetre in diameter. The object of the puncture was to destroy the centre inhibiting heat,* discovered by Dr. Ott to be about the corpora striata. There are three points which, when punctured, produce heat,—(1) the tissues about the corpus striatum, the nodus cursorius; (2) the anterior end of the thalamus; and (3) the point between the thalamus and corpus striatum, which Schiff has pointed out as causing in rabbits a peculiar

cry when injured. Dr. Ott also has shown that the increase of temperature was due to increased production of heat. After the operation the animal was kept in a room until a sufficient rise of temperature ensued. If the first puncture was not successful in producing fever, the operation was repeated till the inhibiting heat-centre was injured. The animal was then transferred to D'Arsonval's calorimeter, surrounded by felt and feathers. The temperature of the calorimeter was kept a little below that of the room. The air was aspirated from the calorimeter by means of Voit's respiration apparatus, the large meter here being run by an overshot water-wheel. The temperatures are Fahrenheit in the following experiments. The thermometers were corrected at the Yale Observatory. The calculations were made in the manner published elsewhere. In all the experiments the temperature of the room and the calorimeter were kept as nearly as possible the same. In a series of experiments it was found that for every degree the calorimeter stood below that of the air, it was necessary to deduct $\frac{1}{100}^{\circ}$ F., as normally the calorimeter rose this much in the warmer air of the room. Lately the correction has been reduced to $\frac{1}{1000}^{\circ}$ F. In all the experiments the watery solution of the drug was used and injected subcutaneously.

CALORIMETER EXPERIMENTS—HYDROCHINON.

Experiment 1.—Rabbit, weighing 3.4 lbs.

	Time.	Temperature.
Trephined skull; made a small puncture through anterior part of opening.....	9.45 A.M.	103 $\frac{1}{2}$
Puncture through posterior part of opening.....	11.15	104 $\frac{1}{2}$
	2.20 P.M.	107

Time. P.M.	A. T.†	E. T.	C. T.	R. T.	Meter.
2.20	81.4	78	77.9	107	646169
2.35	82.1	80	78.2		
2.50	82.3	80.1	78.4		
3.05	82.6	80.1	78.6		
3.20	82.9	80.3	78.8	105	649009
	82.2	79.9	.9 gain.	2 loss.	2840

3.20. Injected 0.12 gramme hydrochinon.

4.15	84.5	78.9	78.8	105 $\frac{1}{2}$	
4.30	84.6	79.6	79.6		
4.45	84.6	79.6	79.8		
5.00	84.9	80	80		
5.15	85.1	80	80.2	105 $\frac{1}{2}$	652768
	84.7	79.6	1.4 gain.		3759

† A. T. is air temperature; E. T. the temperature of the tube leaving the calorimeter through which the air was aspirated; C. T. is calorimeter temperature; R. T. is rectal temperature.

* *Journal of Nervous Diseases*, 1884 and March, 1887.

$V + (V \times t \times .00035) = V'$
 $V' = 2840 \text{ litres} \times 61.028 \text{ cu. in.} = 173319.5 \div 1728 = 100.3 \text{ cu. ft.}$
 $t' = 79.9 - 32^\circ = 47.9 \times .00035 = .0974$
 $V + .0974 V = 100.3 \text{ cu. ft.}$
 $V = \frac{100.3}{1.0974} = 91.4 \text{ cu. ft. at } 32^\circ \text{ F.}$
 $W = 91.4 \times .08073 = 7.39 \text{ lbs.} = \text{wt. of air.}$
 $Q = W \times t \times \text{sp. h.}$
 $7.39 \times 2.3 \times .2374 = 4.03 = \text{heat fr. air.}$
 $37.5 \text{ lbs.} = \text{wt. of water in calorimeter.}$
 $37.5 \times 1 \times 1.008 = 37.51 \text{ heat units to raise water } 10^\circ \text{ F.}$
 $43.5 \text{ lbs.} = \text{wt. of copper in calorimeter.}$
 $43.5 \times 1 \times .095 = 4.13 = \text{heat to raise copper } 1^\circ \text{ F.}$
 $37.57 + 4.73 = 42.30 = \text{heat required to raise calorimeter } 1^\circ \text{ F.}$
 $42.30 \times (9 - 3 \text{ correction}) = 25.03 = \text{heat to calorimeter.}$
 $25.03 = \text{heat to calorimeter.}$
 $4.03 = \text{heat taken from air.}$
 $21.00 = \text{heat dissipation.}$

After giving drug :

$V' = 3759 \text{ litres} \times 61.028 \text{ cu. in.} = 229404.2 \div 1728 = 132.2$
 $t' = 79.6^\circ - 32^\circ = 47.6 \times .00035 = .0969$
 $V + .0969 V = 132.2 \text{ cu. ft.}$
 $V = \frac{132.2}{1.0969} = 120.4 \text{ cu. ft. at } 32^\circ \text{ F.}$
 $W = 120.4 \times .08073 = 9.71 \text{ lbs.} = \text{wt. of air.}$
 $Q = W \times t \times \text{sp. h.}$
 $9.71 \times 5.1 \times .2374 = 17.99 = \text{heat fr. air.}$
 $41.78 \times (1.4 - .4) = 41.72 = \text{heat to calorimeter.}$
 $17.99 = \text{heat from air.}$
 $23.73 = \text{hourly dissipation.}$

HEAT PRODUCTION.

$Q = W \times t \times \text{sp. h.}$ $W = 3.4 \text{ lbs.}$
 $\text{Loss of temperature per hour, } 2^\circ; \text{ sp. h. } .83.$
 $3.4 \times 2 \times .83 = 5.66 = \text{heat taken from reserve.}$
 $21.00 = \text{heat dissipation.}$
 $5.66 = \text{heat taken from reserve.}$
 $15.34 = \text{hourly production.}$

After giving drug :

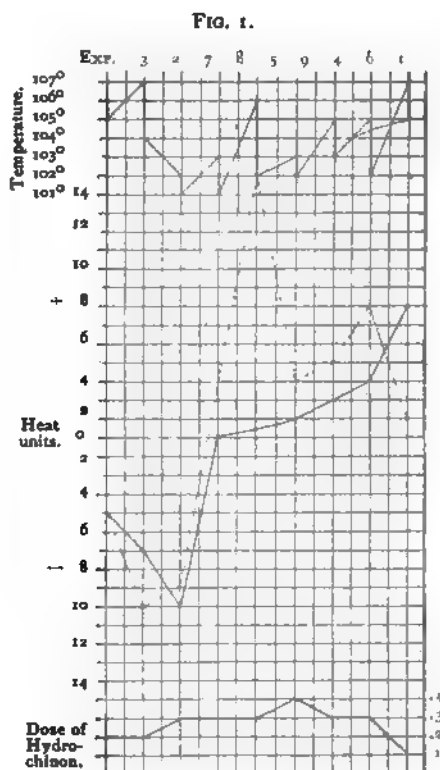
No change of temperature; hourly dissipation 23.73 = hourly production

	Heat dissipation.		Heat production.			
	Before drug.	After drug.	Before drug.	After drug.		
	R. T.	R. T.	R. T.	R. T.		
1.	21.00	107-105	21.73	15.34	105½-105½	23.73
2.	12.64	107½-106½	2.43	10.15	104-104	2.43
3.	6.17	106½-106½	1.15	6.17	105½-105½	.61
4.	17.98	105-104½	23.20	16.91	104½-103	20.81
5.	15.98	106-106½	25.64	16.64	104-101.7	18.07
6.	1.13	105½-105½	9.14	1.57	105½-108	5.59
7.	21.74	102½-102½	14.46	20.34	102½-100.4	9.50
8.	9.47	103½-102½	13.50	8.57	102-100.0	9.83
9.	14.66	103½-103½	18.94	14.66	103½-102½	16.80

The above results give a tabulation of the experiments with hydrochinon for one hour before the subcutaneous injection of the drug and one hour after. The animal was put in the calorimeter at periods varying from a quarter of an hour to an hour after the administration of the drug.

Dose.	Heat production.	Heat dissipation.	No. of exp.
.2	- 5.56	- 5.02	3
.2	- 7.72	- 10.21	2
.3	- 10.78	- 7.28	7
.3	+ .66	+ 4.03	8
.3	+ 1.31	+ 17.66	5
.4	+ 2.14	+ 4.28	9
.3	+ 3.90	+ 5.22	4
.3	+ 4.02	+ 8.01	6
.1	+ 8.40	+ .73	1

The above table shows the dose of hydrochinon, the decrease or increase of heat production in each experiment, also the increase or decrease of heat dissipation. In Fig. 1 the



increase and decrease of units of heat production are expressed by curves. The dose is also shown by a curve, and also the changes of temperature during each experiment. The dotted line is always that of heat dissipation. Thus, in Experiment 3 the temperature fell from 106° to 105° ; the decrease of heat production was five units, and of heat dissipation the decrease was five. By following the line marked Experiment 3 down we find the dose to be .2 of a gramme. I should like to give all the experiments in detail, as in Experiment 1, but the calculations would only be tedious and monotonous.

In Experiment 1 there is an increase of heat dissipation and heat production in the period after administration of the drug. Here the production of heat is increased more than the dissipation. In Experiments 2 and 3 there was a decrease of dissipation and production; in Experiment 2 the decrease of dissipation was greater than that of production, while in Experiment 3 the decrease of both is small. In both these cases the decrease of production would have been greater had the animal

been transferred to the calorimeter within fifteen minutes after the administration of the drug. Subsequent experiments demonstrated that the drug commenced to act in ten to fifteen minutes after its injection subcutaneously. The remainder of the experiments—three are fevered animals and two are normal rabbits—show an increase of heat production and heat dissipation, the latter being much greater than the former. Hydrochinon generally in full doses causes increased production and increased dissipation, the latter being greater. By this means the temperature is lowered. Small doses at times also decrease heat production and heat dissipation.

Heat dissipation.	Heat production.	Heat dissipation.	Heat production.	No. of exp.
Before drug.		After drug.		
R. T.		R. T.		
19.94	103½-105½	19.82	105½-104	7.41 1
16.89	103½-103½	15.69	103½-108	13.62 2
14.03	104½-103½	11.93	103½-108½	18.87 3
11.43	105½-105	9.44	105-103½	9.44 4
20.62	105½-106½	24.76	106½-104½	18.80 5
13.52	107-107½	14.89	107½-104	11.83 6

The above numbers show the effects of antipyrin on heat production and heat dissipation; they show also the temperature changes.

ANTIPYRIN.

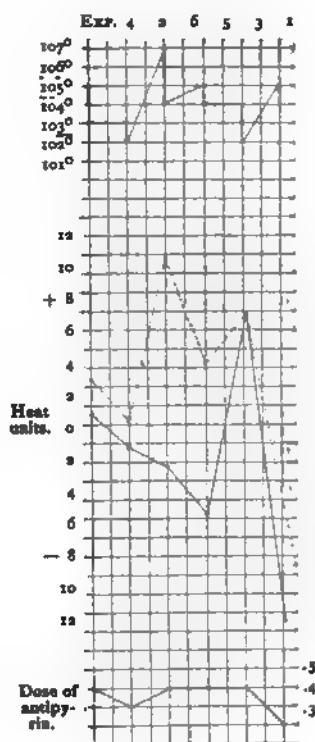
Dose.	Heat production.	Heat dissipation.	No. of exp.
.5	+ 1.43	+ 3.43	4
.4	— 2.08	+ .51	2
.5	— 3.06	+ 9.95	6
.5	— 5.96	+ 4.15	5
.5	+ 6.94	+ 6.94	3
.3	— 11.81	— 8.24	1

The above table shows the decrease and increase of heat units in heat production and dissipation; also the number of experiments and the dose of antipyrin.

The series of experiments with antipyrin show an increase of heat dissipation in all the experiments except one, where there is a decrease of the dissipation and production, the fall of the latter being much greater than the former. There is also a decrease of heat production in Experiments 2, 6, and 5. In Experiments 3 and 4 there is an increase of heat production and of dissipation, but the dissipation is increased more than the production. No spasms or convulsions were noted from the use of the drug.

Generally it may be said that antipyrin decreases heat production and increases heat dissipation, thus being an ideal antipyretic. Fig. 2 shows the results in a graphic manner.

FIG. 2.



THALLIN.

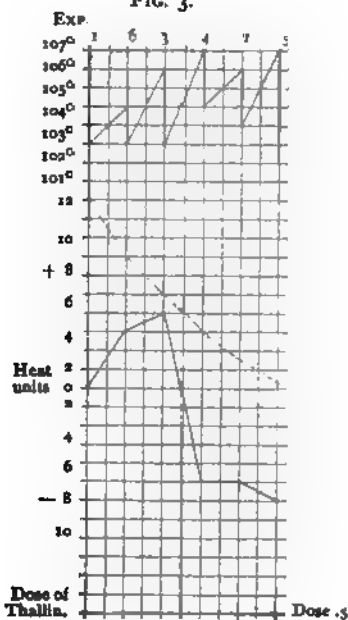
Heat dissipation.			Heat production.		
Before drug.	After drug.		Before drug.	After drug.	
	R. J.			R. T.	
14.90	105½-105½	26.88	14.90	105½-108	15.6
15.50	106-105½	15.75	14.82	105½-103½	8.07
17.18	106½-104½	23.39	11.05	104½-102½	16.41
15.97	107-107½	20.63	17.33	107½-104½	11.09
18.67	107-106½	20.83	16.75	106½-101½	9.13
16.22	104-104½	23.93	16.84	104-104½	20.89
Dose.					
.5	Exp. 1 + 11.98			+ 0.78	
.5	" 2 + .85			— 6.74	
.5	" 3 + 6.72			+ 3.46	
.5	" 4 + 4.66			— 6.24	
.5	" 5 + 1.86			— 7.52	
.5	" 6 + 8.72			+ 4.05	

The above tables show the effects of thallin upon heat production and heat dissipation; also the variations of temperature. The second group of numbers exhibits the dose, the number of experiments, and the respective increase and decrease of heat production and heat dissipation by thallin.

The thallin experiments demonstrate an increased dissipation, while half show increased production and the other half diminished production. The increase of dissipation is much greater than that of production. These results prove that thallin reduces fever by increasing dissipation, while its effect upon heat production is variable even with the same dose.

Fig. 3 shows the changes delineated by curves.

FIG. 3.



KAIRIN.

Heat dissipation.				Heat production.				Exp.
Before drug.	After drug.	R. T.	Dose.	Before drug.	After drug.	R. J.		
21.31	106-107½	23.91	.5	16.60	107½-105½	15.95	1	1
14.39	107-106½	29.96	.5	13.91	106½-104½	18.44	2	2
17.08	106½-106	22.19	.5	16.52	106-101	8.09	3	3
17.80	105½-106	26.38	.5	18.29	106-99½	10.44	4	4
15.76	106-106½	32.19	.3	15.87	106½-106½	38.19	5	5
10.15	106½-106	17.35	.4	9.65	106-102½	8.89	6	6
18.92	105½-104½	15.92	.4	17.73	104½-103½	11.75	7	7

Experiment.		
+ 8.60	- 10.67	1
+ 15.57	+ 4.53	2
+ 5.71	- 8.43	3
+ 8.58	- 7.85	4
+ 16.92	+ 16.32	5
+ 7.80	- .76	6
- 3.00	- 5.98	7

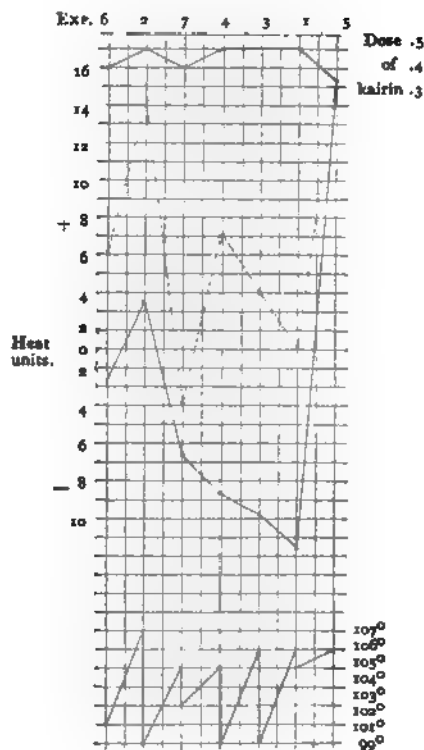
The above experiments are tabular statements of the effects of kairin on the heat phenomena, also the effects of the drug upon the temperature, the increase and decrease of heat production and dissipation. In the experiments with kairin heat dissipation was increased in all except one, where it was slightly diminished. Heat production was diminished in the majority of the experiments. This drug reduces temperature by decreasing heat production and increasing heat dissipation.

Fig. 4 illustrates the changes numerically given.

In reviewing these experiments with the antipyretics, it may be concluded that all increase heat dissipation, while their effect upon heat production is variable.

Why they should increase the production in one animal and diminish it in another, with the same or nearly the same dose, I

FIG. 4.



am unable to explain. The conditions surrounding the experiments were always the same.

It is true that I am dealing with a fever experimentally produced, a true nervous fever, where heat production is increased, and it is possible the drug was not able to retard the tendency to increment of heat production. No other effects were produced in the animals except (Experiment 1) where .5 gramme of kairin caused the animal to stagger, with loss of power in the legs. In the calorimeter convulsions appeared, and death ensued an hour and a half after the injection of the drug.

The figures show that there is no direct relation between the curve of temperature and that of heat production and that of heat dissipation. The curve of temperature is a resultant of the curves of heat production and dissipation. High temperature may be either the result of decreased or increased production and of decreased or increased dissipation. Thus, if heat production is decreased, heat dissipation may be decreased and the temperature be high, or heat production may be increased and heat dissipation decreased, also causing a high temperature. In the case of thallin the want of relation of the fever-curve to that of either heat production or of heat dissipation is well marked.

These experiments also demonstrate that as a rule heat production follows heat dissipation in its ups and downs, although the drugs sometimes reverse matters, as in the antipyrin series.

*AN EXPERIMENTAL INQUIRY INTO THE
CHEST MOVEMENTS OF THE
INDIAN FEMALE.**

BY THOS. J. MAYS, M.D. PHILADELPHIA, PA.

THE function of respiration is a very complicated act, but is principally carried on by the movements of the thorax and of the diaphragm. The former is chiefly supplied by the intercostal nerves, which arise from the thoracic portion of the spine; while the diaphragm is innervated by the phrenic nerve, which arises from the third and fourth cervical nerves. The diaphragm has an extensive range of motion, and during a maximum contraction it has the power of more than doubling the chest capacity, and is therefore the most essential factor in respiratory motion.

While, then, from a morphological point of view there is no doubt that the expansibility of the thorax is greatest in its longitudinal direction, Boerhaave† as long ago as 1744 observed that a fundamental difference existed between male and female respiration, that the abdominal or diaphragmatic breathing is most prominent in the male, and that the costal breathing is most marked in the female. The question of greatest interest to us here is whether this difference of respiratory motion is primitive, or whether it was acquired through influences such as are known to have modified other portions of the body. Hutchinson,‡ who likewise paid a great deal of attention to this subject, did not pretend to explain the cause of the variation, although he did not believe that it was caused by tight dress, because he found the same to exist in girls from twelve to fourteen years old who had never worn anything tight. He admits,

however, that it may be a peculiar "reservation against the period of gestation, when the abdomen cannot allow of so free a descent of the diaphragm."

It occurred to me that an observation on the respiratory movements of females of a wild race, who had never been subjected to the constriction produced by civilized dress, would assist in solving this problem, and I feel deeply indebted to the kindness of Mrs. J. Bellangee Cox, Mrs. Chas. F. Lennig, and Mrs. Thomas K. Conrad, directresses of the Lincoln Institution, for granting me the privilege of investigating the chest movements of the Indian girls in that school. This was done by means of a pneumograph devised by me somewhat after that of Paul Bert. The instrument consists of a pair of calipers with two long and two short arms. The long arms are applied to the chest and the short arms extend beyond the pinion which binds the instrument together. Between the two short arms and by means of two small pinions an air-drum is adjusted in such a way that the slightest motion produces either a rarefaction or a condensation of the air in the drum, which being connected by a column of air with a similar drum carrying a registering lever, the movements of the chest are accurately marked on a revolving cylinder. In order to produce a slight and uniform pressure on the walls of the chest, the two long arms are connected near their union by a thin piece of elastic rubber.

In all I examined the movements of eighty-two (82) chests, and in each case took an abdominal and a costal tracing. The girls were partly pure and partly mixed with white blood, and their ages ranged from between ten and twenty years. Thus there were thirty-three (33) full-blooded Indians, five (5) one-fourth, thirty-five (35) one-half, and two (2) were three-fourths white. Seventy-five (75) showed a decided abdominal type of breathing, three (3) a costal type, and three (3) in which both were about even. Those who showed the costal type, or a divergence from the abdominal type, came from the more civilized tribes, like the Mohawks and Chippewas, and were either one-half or three-fourths white; while in no single instance did a full-blooded Indian girl possess this type of breathing.

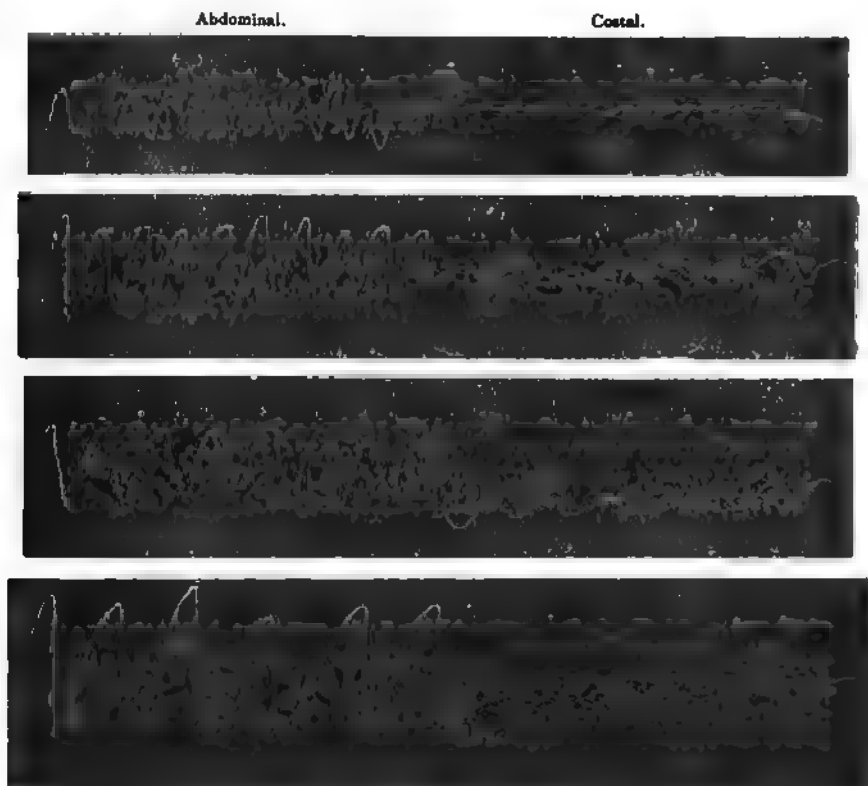
Below will be found four tracings which are characteristic of the abdominal type of breathing as compared with the costal breathing among the Indian girls at the Lincoln Institution:

* Read before the College of Physicians (Phila.), April 6, 1887.

† *Prælect. Acad.*, § 623, tom. v. p. 144. Ed. Haller, Amst., 1744.

‡ "Thorax," Todd's *Cyclopædia*, vol. iv., Part II., p. 1080, 1852.

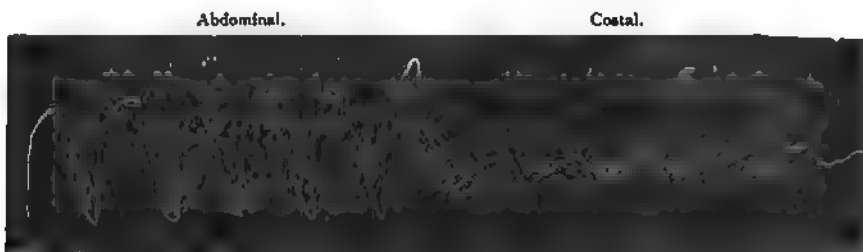
FIG. 1.—TRACINGS TAKEN FROM CHESTS OF INDIAN GIRLS.



For the sake of comparison I will append a tracing from the chest of a civilized male (adult), which bears a close analogy to those of the above

constriction could modify the movements of the thorax during respiration. At my first visit to the institution I obtained an exceptional costal type of respiration from a full-

FIG. 2.—TRACING TAKEN FROM CHEST OF A CIVILIZED MALE.



From these observations it obviously follows that, so far as the Indian is concerned, the abdominal is the original type of respiration in both male and female, and that the costal type in the civilized female developed through the constricting influence of dress around the abdomen. This is markedly shown in the greater prominence of the costal movements in those girls who were either one-half or three-fourths white, and who were hence dominated to a greater or less extent by the influence of civilized blood. While these tracings were taken an incident occurred which demonstrated that abdominal

blooded Indian girl. At my next visit I concluded to repeat this observation, and found that, contrary to my instructions concerning loose clothing, etc., this girl at my first visit had worn three tight belts around her abdomen. After these were removed she gave the abdominal type of breathing which is characteristic of nearly all the Indian girls.

It is also very evident that the costal type of respiration in the civilized female is not due to the influence of gestation, as was believed by Boerhaave, Haller, and Hutchinson; for the influence of this process obtains

as much among the uncivilized as it does among the civilized people, yet my observations fail to confirm such a view in the least.

What practical bearing, then, does an immobile thorax have on health and disease? In a former communication* on this subject I endeavored to show that one of the principal factors in the causation of pulmonary consumption is an inactivity, or a want of expansion of the upper portion of the lungs. Now, is the want of expansibility in the lungs of these Indian girls a mere coincidence, or is there a causal relation between it and pulmonary consumption? I think the existence of the latter relation is almost certain when we take into consideration the fact that the death-rate from this disease among those Indian tribes who have most recently come in contact with civilization, and from whom these school-children are chiefly obtained, is nearly double that of the white race. There is little doubt that the Indian in his native wild state is almost exempt from pulmonary disease, as is well attested by the history of those tribes who are living now as they have lived for three centuries or more, but his first contact with civilization surely disintegrates him. His habits and customs are entirely reversed. His life of physical activity, which was exclusively carried on in the open air, and which had a tendency to stimulate and to develop his respiratory organs, is now exchanged for the reservation, where he is housed and fed, his roving instincts checked, and where he soon sinks into a state of listless mental and physical apathy, and from which he readily merges into confirmed pulmonary disease.

Starting from these premises, our path of duty, when considered in relation to the prevention of pulmonary disease among these Indian children, lies straight before us, and this is in the direction of increasing their chest capacity. This can undoubtedly be best accomplished in the first place by daily inhalations of compressed air in accordance with the Waldenburg method; secondly, by gymnastic exercise, which is calculated to develop the muscles of the chest and of respiration; and, thirdly, by allowing them an abundant supply of fresh air both day and night.

One more point deserves attention. What is the influence of such abdominal constriction as is practised by our civilized female

on the respiratory function? Is it detrimental to health, or is it not? If, as is shown by my experiments, that interference with the motion of the diaphragm produces a compensatory breathing in the costal portion of the chest, does not this tend to antagonize or counteract the sluggish respiratory movement of the lung apices? Is there any intimate relation between this induction and the fact that proportionally, and as a rule not without some exceptions, a less number of females than males die of pulmonary consumption?

NOTE.—My warmest thanks are due to Mrs. Walters and Miss Pine, teachers at the Lincoln Institution, as well as to Drs. Burnett, Bliss, and Mr. Kyner, for their kind assistance in the prosecution of this work.

1716 CHESTNUT STREET.

RESULTS OF THE USE OF CASCARA SAGRADA IN FIFTY CASES.

BY M. H. FUSSELL, M.D., PHILADELPHIA, PA.

SINCE this drug was first brought prominently before the profession, the columns of our journals have been crowded with articles concerning it. I have been so firmly convinced of the great value of the drug as a laxative, however, that I do not hesitate to add to this already great number. During my term of service in the Medical Dispensary of the University of Pennsylvania we have used the drug largely in my room, almost to the exclusion of other laxatives.

I have selected these fifty cases because they were the longest under observation, and not because they all showed favorably to the drug. Indeed, I have taken care to include all the unfavorable cases whatever the time they were under observation. The preparation used in all cases was the fluid extract.

The beginning dose in all cases was gtt. xx t. d. Of the fifty cases the drug was useful in forty-three (43).

It entirely failed in seven (7).

In the forty-three favorable cases the dose of the drug was *diminished*, after using a longer or shorter time in twenty-nine (29) instances.

The original dose was continued in fourteen cases.

In *no* instance was it found necessary to *increase* the dose, which by trial was found sufficient to cause a daily evacuation of the bowels.

By referring to the summary of cases, it will be seen that when the drug failed the

* "Some of the Causes of Pulmonary Consumption viewed from a Darwinian Stand-point," *Med. News*, November 27, 1886.

Summary of Cases.

Case.	Age.	Disease.	Condition of bowels before use.	Time under observation.	Result.	Remarks.
1. Chas. Sherman.	...	Gastralgia.	Constipated.	1 month.	Bowels regulated; dose same at end of month.	Patient expressed himself as much relieved.
2. Jno. Miliken.	76	Chronic dyspepsia.	Constipated.	1 month.	Bowels regulated, and dose diminished.	
3. Jno. Kane.	60	Chronic dyspepsia.	Constipated.	4 months.	Bowels regulated; dose reduced. At end of time caused four daily passages.	
4. Pat Conly.	26	Lead-poisoning.	Constipated.	Bowels kept regular.	Patient did not return. This patient had not had a passage for years without monstrous doses of purgatives. Cascara was used only once daily at end of three months, and dose not increased.
5. Bridget Farrel.	35	Gastric catarrh.	Constipated.	.....	Bowels regulated.
6. Katie M.	19	Chlorosis.	Constipated.	1 week.	Bowels not opened.	
7. Mrs. C.	76	Cardiac disease.	Obstinate constipation.	3 months.	Bowels regulated daily. One dose taken at last.	
8. Mrs. W.	35	Stricture of rectum. (Syphilitic.)	Constipated; ribbon-feces. No passage for one week at a time.	1 year.	Bowels opened daily, but dose increased to $\frac{1}{2}$ t. d. This dose disagreed with stomach. Stopped, and in three weeks began again, gtt. xx, with excellent effect.	Under treatment the stricture relieved, and now bowels are regular.
9. Dinah C.	27	Tertiary syphilis.	Constipated.	2 months.	Bowels regulated; dose decreased.	At end of observation took the dose infrequently.
10. Fredericka H.	42	Migraine.	Constipated.	2½ months.	Bowels regulated; dose decreased.	
11. Jno. K.	23	Acute dyspepsia.	Constipated.	1 week.	Caused diarrhoea and griping.	Increased dose to gtt. xl t. d., and then decreased, and finally did without; had used large amounts of rhubarb, etc. After decreasing dose dispensed with medicine and had a daily stool. Finally took medicine every third day.
12. Ed. P.	...	Sciatica.	Chronic constipation.	1½ months.	Bowels regulated.	
13. Wm. G.	45	Chronic dyspepsia.	Constipated.	3 months.	Bowels regulated.	
14. Ella F.	20	Cardiac disease.	Constipated.	3 months.	Bowels regulated.	Had taken all sorts of purgatives; gss taken t. d. in beginning. This gradually reduced, and finally medicine discontinued and bowels regular.
15. Maggie M.	25	Chronic dyspepsia.	Constipated.	2 months.	Bowels regulated; decreased dose.	
16. Chas. R.	29	Chronic dyspepsia.	Constipated.	2½ weeks.	Bowels regulated; dose reduced; slight griping.	
17. Barbara S.	45	Malarial frontal neuralgia.	Constipation chronic.	1½ months.	Bowels regulated; dose diminished.	Had taken all kinds of purgatives; decreased dose.
18. John D.	50	Suspected Addison's disease.	Irregular.	1 week.	Bowels made almost uncontrollably loose.	
19. Peter D.	60	Chronic dyspepsia.	Constipated for years.	9 months.	Bowels regulated; dose decreased; medicine discontinued.	
20. Geo. K.	...	Lead-poisoning.	Constipated.	6 months.	Three stools daily; reduced dose, and bowels kept regular.	Had taken all sorts of purgatives; expressed himself as much pleased with the medicine.
21. Chas. T.	27	Neurasthenia.	Constipated.	1 month.	Bowels regulated; dose reduced.	
22. Edward C.	45	Gastric vertigo.	Constipated.	2 months.	Bowels regulated; dose reduced.	
23. Margaret M.	34	Flatulent dyspepsia.	Constipated.	1 month.	Bowels were kept open, but so much griping that medicine discontinued.	Had taken all kinds of purgatives; decreased dose.
24. Eugene C.	40	Chronic dyspepsia.	Constipated.	1 month.	Bowels regulated, but dose kept up.	
25. Mary S.	24	Gastralgia.	Constipated.	1 week.	Did not cause movement, but caused much griping.	
26. Peter B.	30	Chronic dyspepsia.	Constipated.	1 week.	Bowels not opened at end of week, but felt better.	Had taken all kinds of purgatives; decreased dose.
27. John D.	45	Chronic dyspepsia.	Constipated.	4 months.	3 t. d. caused two passages at first; at end of time caused four passages daily.	
28. John M.	...	Chronic dyspepsia.	Constipated.	2½ months.	Bowels regulated. At end of time had discontinued medicine and bowels were regular.	
29. Eliza C.	40	Anæmia.	Constipated.	1½ months.	Bowels regulated and dose reduced.	Had taken all sorts of purgatives. Expressed himself as much pleased with the medicine.
30. Michael B.	40	Migraine.	Constipated.	3 weeks.	Bowels regulated; dose reduced.	
31. Michael G.	45	Bronchitis; chronic constipation.	Constipated.	2 months.	Bowels regulated and dose reduced.	
32. James G.	61	Gastralgia.	Constipated.	1 month.	Bowels regulated; dose continued.	Had taken all kinds of purgatives; decreased dose.
33. Lewis Y.	51	Chronic dyspepsia.	Constipated.	1 month.	Bowels regulated; reduced dose.	
34. Leonard F.	...	Chronic constipation.	Constipated.	3 weeks.	Increased to gtt. xl, and acted well.	
35. James D.	20	Dyspepsia.	Constipated.	1 month.	Bowels regulated; medicine continued.	Had taken all kinds of purgatives; decreased dose.
36. Hugh Mc.	38	Bronchitis.	Constipated.	2 weeks.	Bowels regulated.	
37. May M.	60	Fatty heart.	Constipated.	6 months.	Bowels regulated; dose reduced.	

Summary of Cases.—Continued.

Case.	Age.	Disease.	Condition of bowels before use.	Time under observation.	Result.	Remarks.
38. John D.	31	Gastric ulcer.	Obstinate constipation.	5 months.	Bowels regulated; dose once a day.	
39. John H.	25	Acute dyspepsia.	Constipated.	1 month.	Acted irregularly; sometimes diarrhoea, sometimes no effect.	
40. Wm. C.	44	Chronic dyspepsia.	Constipated.	6 months.	Bowels regulated; dose discontinued.	
41. Sallie S.	27	Mitral disease.	Constipated.	3 months.	Bowels open only twice a week at first, after daily, and dose not increased.	
42. Mrs. S.	50	Chronic constipation.	Constipated.	4 months.	Bowels regulated; dose reduced.	
43. Miss L.	...	Chronic constipation.	Constipated.	2 weeks.	Bowels regulated; dose reduced.	
44. Mrs. F.	38	Neurasthenia.	Constipated.	6 months.	Bowels regulated by constant use; when medicine stopped bowels constipated.	
45. James M.	50	Chronic dyspepsia.	Obstinately constipated.	1 month.	5ii t. d. regulated bowels; after two weeks reduced to 5i.	This patient took fabulous doses of purgatives. Used to buy compound cathartic pills by the thousand.
46. Robt. R.	...	Costa. brach. neuralgia.	Constipated.	2½ weeks.	Bowels regulated.	
47. Mrs. C.	60	Carcinoma of stomach.	Constipated.	2 months.	Bowels regulated and dose stopped.	
48. Mrs. W.	73	Chronic constipation.	Constipated.	1 year.	Bowels regulated and dose only once daily.	
49. Lotta H.	23	Epilepsy.	Constipated.	6 months.	Bowels regulated; dose reduced.	
50. Mrs. D.	25	Chronic dyspepsia; pregnant.	Constipated.	2 months.	Bowels regulated, but so much griping that discontinued.	
51. Mrs. W.	50	Cardiac disease.	Constipated for years.	9 months.	Bowels regulated; dose not increased.	

cases were under observation for short times. The result might have been different if we could have kept the cases in sight.

It will also be noted that where the constipation was acute the drug did not act so well as where it was chronic. It was especially useful in long-standing constipation of older patients. Note especially Cases 2, 7, 13, 19, 27, 31, and 45.

The dose used (gtt. xx t. d.) was found to act better than a larger dose once daily. It did not cause griping, caused a more natural stool, and never disagreed with the stomach.

The results, as shown above, or in eighty-six per cent. of the cases, favorable, and over one-half, or fifty-eight per cent. of the cases, requiring the original dose to be diminished, while in no case was the efficient dose increased after prolonged use, justify the writer in recommending the trial of the drug in all cases of chronic constipation.

The bad taste of the fluid extract is somewhat of a drawback to its use in private practice. So far as my experience goes the various elixirs are about as nauseous as the extract.

In order to overcome this difficulty, Mr. Howard Levering, of Manayunk, prepared an abstract of the drug for me. He manipulated it much as he does the proper drug in making an abstract of jalap. In private practice I use this abstract of cascara sagrada in compressed

pills in doses of 3 to 5 grains, and find it quite as efficient and much more palatable than the fluid extract.

189 GREEN LANE, MANAYUNK.

CURIOSITIES OF THERAPEUTICS.

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I. PRIMITIVE AND PSYCHO-PHYSICAL MEDICINE.

(Concluded from page 237.)

IT has before been remarked that primitive peoples possess no knowledge of remedies or remedial effects in the sense understood by civilization. Yet, in the vicissitudes of nomadism (a mode of life that is far from inculcating economy or regard for the future), where there is no intermediate of feast or famine, there are times when whole tribes are brought to straits, and individuals seek anything in life or nature that promises subsistence. In this way some empirical information is occasionally obtained of substances that act as irritants and poisons, but such is soon lost or forgotten unless given to the *Shams*, who, by reason of a semi-priestly function, are the repositories of fact and tradition, treasuring the same as part of the mysteries

of the sacred lodge. Indeed, the trifling herbal knowledge some few tribes possess appears, for the most part, to have been derived from Romish missionaries,* most of whom possess some smattering of botany and pharmacy; and this little is of doubtful character, since the results obtained are never regarded as specific or substantive, but *reflective*,—i.e., the manifestations of the spirit with which the article is imbued. Nothing is understood of the relations of age, season, climate, or mode of gathering, to the growth; that the same herb or plant may be innocuous at one time and toxic at another, or depend for action upon the quantity employed; and should any failure result in an application, the fault lies not with the material, but its spirit, who is deemed inimical to the object, or friendly to that to which the object is directed. That poisons are often resorted to in order to satisfy personal ambition or pique is not to be denied, but their employment is by no means so frequent, or familiarity therewith so general, as is commonly surmised, and such are usually preparations of strychnine or arsenic, such as are procured from trappers and traders.

A writer, whose name I have forgotten, some years since gave to the public as the result of cursory observations among the savages of the northern frontier, an amount of information regarding the employment of toxics that forcibly recalls the days of Doctor Dee and the "Black Art," or the latter part of the sixteenth century, when poisons and

poisoners openly and shamelessly stalked abroad, penetrating hut, palace, and cloister alike, and the civilized world feared to eat, sleep, inhale odors and perfumes, or even approach the altar and holy font,—mysteries all that have long since been laid bare by chemical and physiological science. Two incidents upon which special stress is laid may be briefly summed up as follows:

An Otchipwe woman had all the muscles of the face paralyzed suddenly through the unknown machinations of a *medicine-man*, and, being of jolly disposition, her mirth was horrifying as being unaccompanied by expression.

Another, suffering with a painful wound of the hand, met a *Sham*, whose ill will she had unfortunately incurred, and who, under the guise of reconciliation, obtained possession of the injured member. He pressed it with such force and fervor as to arouse her suspicions, especially as the pain did not immediately abate. She imagined she saw or felt some foreign substance within his palm, and thereupon boldly accused him of an attempt to bewitch her. Angered by the persistency with which the charge was pressed, he finally admitted it, and announced henceforth, every year, when blackberries were ripe, she would become a *Sioux* †—a prediction that was literally fulfilled by an eruption of purple and black spots that, appearing in autumn, vanished with frost. ‡

* Familiar chiefly with the tribes of the Northwest border and of Mexico, I avail myself of the corroborative evidence of Rev. T. E. Ranney, who was for seventeen years a missionary among the Cherokees and Pawnees, which is briefly condensed as follows (*Archives of Science*, 1870): "They know as little of medicine as they do of religion, and nothing of either. They have no conception of the nature of disease or of the administration of medicine to affect the system, or of anything that would act as a cathartic, though they have learned from the whites that warm or tepid water provokes *emesis*. Bleeding and scarification are employed by the Otoes and Omahas as universal panaceas, but this knowledge is derived from civilization. Indeed, if the medical knowledge acquired from the whites was taken away there would be none left! The practice in accouchement is simply rattling a gourd,—a child's rattle. To remove fevers their *medicine-men* simply puff and blow at the patient with the mouth and practise jugglery; if he can eat he will live, if not he must die. One repeatedly encounters advertisements recommending medicines because they are used by the Indians, but they have no medicines. One of these is a Pawnee toothache cure, which is most absurd, as these people never suffer from diseases of the teeth." (This hardly corroborates the claims of McDade and his "Remedy.")

† "*Sioux*" means simply a "breaking out." Presumably the first Dacotah seen by an Otchipwe was suffering from some epidemic or eruptive disorder; hence the name applied to the former by the latter, and by both deemed a term of reproach. The Dacotahs term the Otchipwes *Hahatunwes*, or "People of the Falls," referring, doubtless, to the Ste. Marie's Rapids, which was once the headquarters of the tribe.

‡ Two Red River men, half-breed Crees, beat an Otchipwe *Sham*, not knowing him to be such, for stealing their clothes. The latter quickly announced his calling, and promised to "bewitch" them before the moon would again be full. A few days later they were discovered naked, wandering aimlessly about the open prairie, and violently insane; and, when seized, both fell into epileptiform convulsions, that in turn were succeeded by prolonged hypnosis, during which the persecutor was accurately described, even to dress, and the place in which he was then hiding,—and where he was subsequently apprehended. In time both recovered, but neither could ever touch spirits without a recurrence of epileptiform spasms. Personal inquiry revealed one to be a son of an epileptic father. The means said to have been employed in this conjuration was the burning of locks of hair obtained surreptitiously from the heads of the unfortunates while asleep; and it is surprising the number of people even of civilization who implicitly believe in this particular form of magic. (See Livingstone's "Expedition up the Zambesi," p. 53.) Again,

None of these cases are at all mysterious to those familiar with mental phenomena and the extreme nervous susceptibility of the savage; even more wonderful results sometimes accrue.* As a medical student I was privy to a practical joke, the outcome of a lecture on "Mental Impressions," played upon one of exceptional physique and health, and that confined the individual to his bed for the better part of a fortnight; and within a month I became cognizant of a like incident occurring among the clerks of a Chicago banking-house. Witness also the involuntary influence of a *Sham* upon a Scotch half-blood, renowned as a marksman, and remarkable for his exemplary Christian piety.

Wabijeshi, "The Marten,"—the *medicine-man* in question,—espying a particularly fine double gun presented to the half-breed by an English nobleman, picked it up, examining with great care, fingering the locks, and peering into the barrels. Shortly after the owner went out to hunt, but most unaccountably every shot sped wide of its mark. The day following he gave the gun a thorough cleansing and overhauling, satisfying himself it was in perfect order, yet his efforts remained unavailing. On trying the weapon at a mark his aim was found to be unerring, though he failed to bring down a single object. All this was most mysterious, and he fancied the gun "bewitched." Laying it aside for a borrowed weapon, he did not fail to slay every creature fired at, which served further to confirm his

by like supernatural means was encompassed the death of a prominent Mexican official. A Maya woman whom he had wronged grievously constructed a clay image, inscribing it with his name, and daily thrust hot needles therein. His disease baffled the physicians, and he died suddenly from excruciating pain in the heart,—his last words, "It goes through my heart." The hour of demise corresponded exactly with that when the Maya witch thrust a red-hot needle into the præcordial region of the image. In this instance the persecutrix had daily entrance to the dwelling of her foe, and was accustomed to stand at his bedside and threaten; and though the latter was a man of education, a graduate of the University of Guadalajara and the military school at Chapultepec, and a politician of note, the Aztec blood in his veins would not permit him to rise above inherent superstition.

* (See Supplement H.) Also I knew an Indian runner who lost his powers by the same means; and whereas he was before the *swiftest*, he now became the *slowest* of his tribe. The *medicine-man* professed to have entered his lodge during the former's absence and there "made *medicine*," and though subsequent events proved him an outrageous liar, and that he was fifty miles away at the time it was claimed the occurrence took place, the victim could not be convinced he had not in some way been bewitched; and he did not again recover his powers until the conjuror had been bribed to remove the spell.

suspicion. Upon *Waubijeshi's* return he was accused of violating hospitality and employing his supernatural powers to the detriment of a *friend*. The latter exhibited some surprise, but admitted "the spirits" might have taken an unknown advantage of him; whereupon, taking it again into his possession, he proceeded to exorcise the gun, after which it was proved to have recovered its wonted accuracy.†

The foregoing also illustrates the facility with which insensible and involuntary impressions may be communicated not only to other persons and to lower organisms,‡ but also to inanimate objects.§ It must be remembered that few even of the highest civilization are able wholly to divest themselves of the influences and impressions derived from inheritance and inculcated by early training; and the manifestations of the will are very far from *always* being the exact definition of the mind. That is to say, the mind is dual, and may at times respond more promptly to a forgotten and involuntary impulse than to one immediate and voluntary. Consequently a voluntary and perfectly unbiased decision where one's preferences are in question is all

† Here the fault manifestly was not with the gun, but the individual behind it, who, in spite of character and education, could not divest himself of the superstitions pertaining to his lineage as derived from an Indian mother, or of the reverence that ignorance always accords to those who deal with the mysterious, supernatural, and occult. He may have imagined the handling of the gun by the *Sham* produced no special impression upon his mind, yet the reverse is evident from his confession that *he narrowly watched the latter, fearing lest he might injure his treasure*. His suspicions could not but be aroused by evidences of curiosity in one who, by virtue of his calling, was supposed to *know everything*. It is also evident that for once the "*medicine-man's*" curiosity overcame the reserve peculiar to his profession.

‡ (See Supplement E.) Some Crees, jealous of the fame of a horse belonging to a neighboring tribe, and widely known as a racer and buffalo runner, employed a *Sham* to perform an incantation ("make *medicine*," to use the vernacular) that would divest the creature of its powers, which was done; the means professedly employed being the anointing of its legs with a mixture of deer's fat and hare's dung. The transaction was soon noised abroad, to the chagrin of the owners, as well as to their pecuniary loss, for the horse lost every race thereafter in which it was entered. Subsequently, on falling into the hands of a Hudson's Bay factor, a practical, hard-headed, non-superstitious Scot, the animal suddenly recovered all its former powers, securing to its new master a wide-spread reputation for *medicine*.

§ See articles in *Popular Science Monthly* for May and June, 1877, by Dr. William B. Carpenter, entitled "Mesmerism, Odyism, Table-turning, and Spiritualism."

but—if not quite—impossible. In such an instance, where an attempt is made to probe the motive, it is difficult to determine whether the verdict is a sequel to preferences or *fear of such* preferences.

It may provoke both mirth and comment, as coming from a member of the medical profession, when the assertion is made that marvellous cures do accrue to the conjurations and jugglery of *Shams*; yet it is none the less true. Though such are in a sense psychological, they are also physiological, as they depend upon the adaptability of the mind to receive and retain impressions. The savage, owing to surroundings and superstitions, is more susceptible to mental impressions than civilized man, and such are less apt to be associated with timid, ill-balanced, and disordered brains than is the case with the latter. I must confess, my own faith in therapeutic results does not rise superior to the consciousness that they are more frequently the sequel of indirect psychological phenomena in either the prescriber, or the one for whom prescribed, or *both*. I can vouch for two physicians, coequal in knowledge and ability, who derive widely different results from the same drug, even when exhibited under precisely parallel conditions and to the same individual; and I have procured all the idiosyncratic phenomena of a full dose of morphia by the exhibition of a black mustard-seed, mistaken in the twilight for the newly-made pill. I have known neuralgias, rheumatisms, fevers, dysenteries, diarrhœas, agues, paralyses, cystitis, etc., to be permanently relieved or benefited; tumors to disappear; convulsions controlled or produced; persons to become instantaneously stricken with blindness or palsy; rendered oblivious to pain and torture; deprived of muscular power and made rigid as marble; to drop as if dead, and pulseless; rise and walk when an instant before incapable of the slightest exertion; all by the conjurations and incantations of *medicine-men*. Also, I am personally conversant with the prediction of events in the far future exactly as they subsequently occurred, and with scrupulous fidelity as to details; the movements of persons and individuals to be described in minutæ who had never been seen, much less heard of, and who were hundreds of miles away at the time.* Moreover, I have witnessed feats of legerdemain, jugglery, and necromancy, exhibited in broad daylight under the full glare of the sun, as well as at

night, without paraphernalia or mystic aids, that would puzzle the most astute professor of civilized magic; some, to be sure, susceptible of explanation under physical and psychological laws, and others not so readily disposed of, save as optical and aural delusions and tricks of the imagination.†

Hypnotism is another branch of the savage conjuror's art, whereby certain nerve-sensibilities are temporarily paralyzed, either by mechanical or psychological process; and this, moreover, though natural to some, is readily acquired through the continued practice of *ecstasia*. It plays an important part in the relief of disease, and may even be carried to fatal results.‡

Call it all quackery if you will, yet the truth remains that the *medicine-man* does relieve suffering; that he is not an impostor in a civilized sense, since he is a firm believer in his own art, no matter what deceits may accompany it; and to him credit is due much more properly than to white charlatans, who, with even greater pretensions, set out to deceive, relying upon the varying chapter of incidents and accidents to cover their ignorance and secure the desired result.

Of course, common sense and *raison d'affin* have no place in primitive psycho-physical therapeutics, and no ideas obtain that are not crude, imperfect, and for the most part irrelevant. It is the implicit faith in the occult and mysterious that enables the savage to recover from disease promptly and readily, and the acuteness of nerve-organization, in this particular, is correspondingly blunted to the effects of *shock*.§ He is *not* better able to endure pain than the man of civilization; on the contrary, is more puerile under its infliction, and wont to give way upon trifling provocation when not sustained by hypnotism or *ecstasia*; but primarily and in the same ratio he is much less a sufferer mentally and physically,|| the result, doubtless, of his mode of life. Moreover, complete rest, while ill or suffering, accords perfectly with the natural indolence of his disposition.

† Supplements G and I.

‡ Vide Supplement H.

§ It is the testimony of all who have had experience among the Indian tribes that medicines, even in *half-doses*, affect them promptly.

|| Says Surgeon Hanson, U. S. Army, in a report to the Secretary of War upon the Indians of the Plains: "Their systems seem to possess comparatively little irritability or tendency to high grades of inflammation, and wounds heal with remarkable facility." Also, Surgeon David Mack, U. S. Navy, who is corroborated by Mr. J. G. Swan, says of the savages of the Northwest coast,

Noise and odor are the prime factors in the *armamentarium therapeuticum* of the primitive physician everywhere throughout the world,* modified only by individual taste and whims. Just as the ancients deemed the nose and ear the highways and emunctories of the brain, so the special senses of hearing and smell are associated with that of vision as the foundation of savage physiology; and all these are appealed to in the most emphatic and discursive manner on every occasion. It is no exaggeration to say I have known whole families, especially during the prevalence of some epidemic such as measles or smallpox, to be literally drummed, rattled, and *stank* out of existence. Just conceive of the "*Natural System of Medicine*" † that requires a patient to be confined in a close and stifling atmosphere, and submitted to combinations of sounds and smells calculated to drive the most obstreperous of foul devils to the remote confines of space,—odors so very infernal and nauseous that *even dogs are made ill thereby!* Can the absurdities of civilization go further?

When the *Sham* is summoned, in company with his assistants he proceeds to the couch of the invalid, and at once enters upon his jugglery without circumlocution. No examination is required to determine the cause or condition, since all maladies have like origin, and he possesses a never-failing means of defining the obtruding demon in the amulets that stuff his *medicine-bag* to repletion, and by which he can instantly summon before his mental vision the unseen denizens of the unknown. There is but one conclusion permissible: one or more demons have taken possession of the sufferer, or, perhaps, if the suffering is definite and pain circumscribed, the part is merely penetrated by the essences of some extraneous substances magically introduced, and that can be removed only by the same mysterious means. Objects professedly removed ‡ are sometimes exhibited, but there is seldom any pretence they are real, or that they serve any other purpose than is ascribed to the images of the Romish Church,—to *typically* bring

to the mental vision that which is supposed to be real.

If possible, the incantation is postponed until night, partly for personal reasons of the conjuror, and partly because the unseen and unknown are supposed to be more amenable to discipline after nightfall. It usually begins with a monotonous chant that rises and falls with abrupt inflections, wherein the demons are abjured to forsake the mortal clay and resume their own proper form, being alternately coaxed, humored, or threatened, as circumstances and their individuality warrant; also set songs are interspersed, the significance of which is not often understood outside of the mystic brotherhood.§ In the mean time a running accompaniment is kept up by means of drums and gourd and parchment rattles in the hands of the assistants.

By and by the songs wax louder and more violent, the drums are pounded harder and faster, the rattles shaken more vigorously and forcibly. Higher and higher the sounds rise, shriller and shriller the conjuror's voice is pitched, and faster and fiercer the accompaniment sounds, until the one becomes a frantic, piercing shriek, the other a pandemonium altogether fiendish, crazing, and excruciating beyond comprehension, until, finally, exhausted by his efforts, fairly black in the face, every pore streaming perspiration, the *Sham* pauses and—*eats*. A famished wolf is a miracle of satiety by comparison with his feats of gormandizing, which are ably seconded by all assembled.

Over and again this performance is repeated, while the smoke and fumes of burning gunpowder, fish-entrails, human and animal excreta, bones, hair, parchment, and fur fill the interior of the lodge to suffocation, procuring *stinks* that may fairly be *felt*; and during the interval the patient is blown upon with the breath,|| the painful parts sucked

§ One of these that I now recall appeared to be used for the purpose of flattering the spirit, and consisted in the constant repetition of the sentence,—

"Great-is-the-spirit-who-pervades-the-whole-world!"

each time in a different key with peculiar staccato rhythm, and marked jerking inflection upon the terminal word. Another is,—

"Great-is-He-who-walks!"

|| "After having been five days in Gömüshtepe I had a numerous levée of sick persons, or at least of men who pretended to be such, to whom I administered blessings and the *nefes* (holy breath)." (P. 73.) . . . "Touching—moving my lips as if in prayer—the suffering part of the body, and having thrice breathed upon her, a deep sigh is uttered. . . . Many in these cases persist they receive

"The nervous system is less active than with whites, as shown by insensibility to pain and the slight febrile symptoms that follow wounds, which heal readily."

* See "Overland through Asia," by Thos. W. Knox, p. 145; "Oriental and Western Siberia," p. 323; "Upper and Lower Amoor," pp. 287–387, by Thomas Atkinson, F.R.A.; and "Tent-Life in Siberia," p. 212, by George Kenan.

† *Vide* "Indian Arcana," by Rev. George C. Bancroft. Boston, 1859.

‡ See page 309, also Supplement G.

with the lips, and sometimes even gashed with knives and flints, that *wet* cupping may be practised by exhausting the air through a bison horn with the lips.* At last, when the excessively tormented and vexed spirit is sufficiently placated or frightened, its exit is facilitated by a discharge of musketry through the lodges and round about to prevent its return; and this performance may be continued for hours after the *medicine-man* has retired.

A weak and mild demon may be gotten rid of with little trouble and ceremony, but an old and *seasoned* individual of varied accomplishments not infrequently demands the combined wisdom and powers of half a dozen or a dozen of the ablest conjurors, days, even weeks, being consumed ere a satisfactory (successful or fatal) issue is reached. Moreover, there are various creeds or articles of faith that are not wholly understood, and it is a mooted question whether by discipline the evil ones are coaxed or frightened from their victims, amenable to both measures, or susceptible of complete annihilation.

But the demon oftentimes does return in spite of all precaution. Relapse soon follows the subsidence of the incantations, or (physiologically speaking) with the termination of the nervous excitement and impression induced, requiring new efforts with the same vigorous application on each occasion, until Nature comes to the relief of the sufferer, or death intervenes and claims its victim. Unfavorable results matter little, and provoke no adverse comment, since the superstitions that attach to the *Sham* render him practically unassailable. It is to be expected that a demon of *standing* possessed of proper pride will endeavor to outwit the *medicine-man* and return with every opportunity, and the stronger and more persistent its manifestations the greater

instantaneous alleviation of their malady." (P. 164.) Again, he says, "The Mohammedan *moolahs* (priests) enjoy great respect from the reputation for mystery which attaches to their character, and which is the object of the dread of the superstitious nomads." (P. 359.)—Arminius Vamberg as a *moolah* in "Travels in Central Asia."

* The vapor-bath is not one of the prerogatives of the *medicine-man*, being resorted to by all indiscriminately without regard to condition or illness. It is merely a small lodge or wigwam, made by setting up a frame of twigs covered with bark, blankets, or skins, within which the individual seats himself, pouring water on heated stones. Urine is often added as a detergent to bathe the body and insure cleanliness, as it combines with the oily exudations of the skin, loosening the filth; and the ceremony is completed by a rush from the bath into the nearest cold pool.

evidence of ability on the part of the conjuror. Then there may have been a *new* spirit summoned to aid the old; or the *Supreme Manit* may have interfered because of some unfulfilled vow.† Anyway, it was *fate*, for the savage is as complete a believer and worshipper of *Kismet* as any Mussulman.

One peculiarity of the sick-lodge, must not be forgotten, and I commend it to the civilized Sangrado: the *Sham* must eat at every pause in his incantations, and that too upon the very best the surroundings afford, else he cannot sustain the courage and strength essential to struggles with the denizens of the unseen world; and it frequently happens that by this means not only the immediate family of the sufferer, but all his blood and *gens* relatives, are reduced from affluence to comparative penury.

Again, if a convocation—or consultation, if you like—of *Shams* is required, it is always summoned by, or in consonance with the wish of, the first one employed. This means the spirits are too strong or numerous for a single individual to cope with,—also more mouths to feed. The first affair of this kind I was permitted to witness occurred among the *Shaguan-da-gawin-ena* Otchipwes, and employed the talent of no less than a half-dozen *Shams*, and as many more novitiates. Gathered from remote distances and points wide apart, they rallied under the leadership of one famous in his day;‡ so much so that his reputation ex-

† A woman suffering from a simple tertian ague sought relief at the hands of the conjuror of her tribe. Every other day when the fever appeared the usual incantations were instituted, but with no permanent benefit. Finally the fellow availed himself of information obtained from a Hudson's Bay factor, who provided him with a number of powders of *quinine*, which were administered to the satisfaction of all parties concerned. But not, however, until the squaw had been mulcted of two handsomely-prepared and ornamented bison-robcs with which she heretofore had refused to part. Said he, "The cause of your trouble is a vow made many moons gone by. You dreamed that bison, moose, and wapiti were about you in great numbers; even hare and wild fowl came to the very door of your lodge; you knew it as an omen that you would no longer want. In gratitude you vowed a handsome robe; but robes were not then plenty, and you forgot. *Kitche-Manito* waited for you to redeem that vow; but as you did not, he became angry, and sent this evil spirit to torment you, graciously allowing one day to intervene that, if you would, you might remember your pledge. You will now appease him with your *two* best robes, one of which will be for the vow and one in propitiation for the delay. He will then permit me to give you a white spirit that will drive the evil one away. You will then become strong, renew your youth, marry again, and become the mother of many fine boys!"

‡ For some reason this individual, who was the son

tended far beyond the precincts of his tribe,—and when assembled a more grewsome and spookish crew it would be difficult to imagine outside of Pluto's own particular domain.*

The "big man" certainly deserved the distinction accorded him, if for no other reason than size and stature; he was by long odds the *largest* Indian I have ever seen, being above six feet in height and four hundred pounds weight. Gorgeously fagged out, he presented all the extremes of savage frippery and splendor, his costume being as *bizarre* as it was striking. From his shoulders hung a massive robe of black bears' skins, elaborately lined and trimmed with scarlet; fringed blue-cloth leggings, and tanned caribou-skin moccasins, both miracles of beaded and dyed porcupine-quill work, ornamented his nether extremities; paints of various colors and hues, green and vermilion predominating, and laid on with no niggard hand, marked his face and the naked flesh wherever exposed; an elegantly-wrought *medicine-bag* of mink-skin and a large silver medallion of Her Majesty Victoria hung suspended by broad ribbons from his neck; and decorations of toys in metal, glass, and wampum, and little bells were artistically displayed at every available point of his dress. To crown all, his head supported the skull of a wapiti stag, or Canadian elk, prepared in a wondrously life-like manner, and surmounted by an immense pair of antlers that nearly doubled his stature. Gurth's vision in Dreamland ne'er conceived so wild a "hunter."

His following all exhibited more or less originality in procuring the hideous and impressive. Ornaments and paint were distributed and arranged with a view to effect, and, as may be imagined, varying and bewildering results were obtained. One had his face completely hidden by transverse bars of vermilion and ochre, with a broad, oval patch of black encircling each eye; a second had daubed his with black, painting the orbits white,—a most ghastly masquerade; a third employed white and black in alternate horizontal bars, the eyes set in vermilion; another satisfied his vanity with plain ochre; and still another wore a wolf-skin robe, the head of the

of a renegade Blackfoot by an Otchipwe woman, preferred to be known by the *Mannikappi* designation of "*Pou-ni-ka-ma-ta*" ("Spirit Wapiti" or Elk), though in Otchipwe his name was rendered as "*Kitche-Mish-a-wak*" (the "Big Elk").

* This incident I reproduce from a paper of mine contributed to the *Popular Science Monthly* in September last.

creature serving as a cowl, that was drawn over the face. The novitiates and assistants, however, differed little from the laity save for *medicine-bags* and instruments, conspicuously displayed as badges of authority and calling.

The scene was night, just before the "witching hour," in a natural opening scarce thirty yards in diameter, beside the lake, hemmed in on three sides by towering red pines amidst stunted spruces, and fitfully illuminated by rays of the moon that straggled hither and thither through the tops. A small fire kindled in the centre only added to the gloominess of the surroundings, its beams serving to magnify the moving figures into ghastly shades and shadows that danced spectrally across the water or over the umbrageous foliage of an evergreen background. Everything tended to recall and impress the mysterious and supernatural.

The unfortunate in whose behalf the *medicine*† council had been called was a man just past the prime of life, suffering from hemiplegic paralysis, by which the right arm was rendered useless, though the leg still retained traces of sensation, and was in some slight measure amenable to will. For some time he had been under the care of a local conjuror who, acknowledging his inability to deal with so great a number of spirits as were here involved, had demanded assistance.

When the sufferer was first introduced to the assemblage he was submitted to a searching cross-examination as to forgotten and neglected vows. Then, after a few uneventful preliminaries, such as looking into amulets to define the number and character of the offending demons, he was placed in the midst of the conjurors, who ranged themselves in a circle to the left of the fire.

Pou-ni-ka-ma-ta—he of the antlered head—led the jig, the entire conjuring crew circling round and round the invalid in single file, chanting a refrain indicative of the unity of purpose and the power of spirits; and this was repeated over and over again until replaced by another higher in key and more emphatic in movement and enunciation, that, in turn, gave way to a third, embodying still more prominently the peculiarities of the one immediately preceding. During all this marching, which towards the last became a stamping quick-step, the performers, each and severally, as the "spirits moved," cast into the blaze

† *Medicine*, in its savage sense, admits of no change in orthography, whether employed in the singular or plural, as a noun or verb, adjective or adverb.

various animal and other substances taken from their *medicine-bags*, selected in accordance with some superstition or fancy that imbued it with *medicine*.*

Turn and turn about these chants were repeated to a constant accompaniment of drums, bells, and gourds, as manipulated by the novices seated at the opposite side of the fire, who varied the music in accordance with the cadence of the voices of their superiors, now and again instituting foul scents on their own account, or chorusing the din with responsive shrieks and howls.

For an hour, perhaps, this continued, when the conjuring crew abruptly came to a halt, facing with military precision towards the centre. At a final flourish of drums and rattles each stretched forth the right hand, with the *medicine-bag* in its grasp, pointing at the sufferer; and this position was silently and rigidly maintained for what seemed an unconscionable period of time (though really but a few seconds), when the *Elk* suddenly uttered a sharp authoritative, "*Hugh!—Begone!*" and march and tune began anew.

Three times these ceremonies were gone over in all detail, and three times the obtrusive spirits were bidden to depart. Then, in response to a query of *Pou-ni-ka-ma-ta's*, the conjured admitted some return of sensation, and that the arm "prickled as if waking from *big sleep*."

Simultaneously with the expiration of the ninth series of ceremonials, the poor fellow became ecstatic,—sprang in mid-air, whirling the maimed member about his head with great rapidity and violence (seemingly with perfect command thereof), at the same time uttering blood-curdling shrieks and yells; then fell to dancing to music of his own improvising,—far from sentimental or entrancing,—conducting himself for all the world as if possessed by an infinite number of those pork-loving gentry that appear in Scripture under the name of "*Legion*,"—as undoubtedly he was.

Not a soul offered to interfere. Indeed, all appeared to regard it as quite a matter of course. And when the poor *be-medicated* devil

sank to the ground, helpless, exhausted, frothing at the lips, and with every muscle tense and spasmodically twitching, not a hand was offered in relief. After a few moments' gazing, audience and performers quietly dispersed, while some friends lifted the unfortunate to his lodge, and there left him alone to recover or die as chance might determine. Justice compels me to add that this apparent stoicism was less due to indifference than to the fact the man was *medicine*, and hence not to be interfered with lest the spell should be undone and the wrath of the spirits be transferred to the meddlers.†

The day following I visited the patient at his own wigwam. He assured me he possessed no remembrance of anything that had transpired subsequent to the moment he announced partial restoration of sensation. Availing myself of the opportunity to examine him, to my amazement I found the two lateral halves of the body coequal in sensation and movement, though the diseased side of course retained its atrophied condition. He was confident permanent relief had been obtained, which I, of course, conceded,—barring certain mental reservations. Subsequently the paralysis returned, completely affecting the right half of the body, the leg for the first time being wholly beyond control. When I left the neighborhood a second conjuration was on the tapis, but I have no means of knowing its results. However, there were reasons convincing to any medical man why there should be no permanent change save for the *worse*.‡

On another occasion, a more than ordinarily intelligent Indian employed as interpreter at a Mission, was taken suddenly with lameness, resultant upon *sciatica*. The resident missionary, who had exhausted his own resources in the way of embrocations and patent medicines, professed positive belief in the fellow's complete conversion to the tenets of Christianity, an opinion in which, from previous knowledge of savage character, I did not at all concur. The aid sought at my hands was necessarily withheld, for reasons unnecessary to repeat, but I promised to see the man and examine him, with a view to determining the exact nature of the malady. On interrogating the latter closely and in private, I discovered he believed himself "*bewitched*," and that for some time (surrepti-

* The theory is that by disciplining spirits of the same class a threat is conveyed to those afflicting the individual or sufferer; hence the burning of bones, entrails, hair, etc., serves a double purpose,—the odors attract the attention of the offending spirits, who are thus made to witness the tortures which the spirits of the articles burned are thus forced to undergo. So salutary a warning cannot but be accepted, save in the case of the excessively evil, who *may* require to be *coaxed*. The songs for the most part are alternate promises and threats; and juggling is intended to *amuse* the spirits.

† Note the analogy to the demonology of the New Testament and early Christian era!

‡ See Samuel Hearne's account of similar procedure, Appendix I.

tiously, of course) he had been under the care of a local *Sham*, who declared the cause of suffering to be "*two worms and a stone*." By strenuous exertions the *medicine-man* had removed *one* worm from the limb, but its fellow and the pebble defied all his efforts, and three other *medicine-men* had been summoned to his aid, whose arrival was hourly expected.

Determined to witness the conjuration, I posted off to the local *Sham* (the worthy missionary had assured me there was not one in the region,—he had converted them all),* whose consent and good will were easily obtained once he understood I was pledged to secrecy.

The expected conjurors came. In the wigwam of the interpreter they gathered, with the invalid in their midst. The chief man drew from his *medicine-bag* a piece of rock-crystal, into which he gazed long and earnestly, then, passing it to the nearest of his brethren, an-

* The innocence and simplicity of this most worthy gentleman, like the majority of missionaries, wholly unfit to cope with the cunning of the savage, either mentally or physically, was quite refreshing. It brings to mind the criticism of Dr. W. H. Dall after hearing a number of Slavés render a hymn with excellent effect: "Altogether it was a scene that would have delighted the hearts of many people who know nothing of Indian character, and as such will doubtless figure in some missionary report. But to any one who at all understands the situation, the absurdity of the proceeding was so palpable that it appeared almost like blasphemy. Old Sakhniti, who has at least eighteen wives, whose hands are bloody with repeated and most atrocious murders, who knows nothing of what we understand by right and wrong, or by future state of reward and punishment,—this old heathen was singing as sweetly as his voice would allow, and with quite as much comprehension of the hymn as one of the dogs in the yard. Indians are fond of singing; they are also fond of tobacco, and for a pipeful apiece one may baptize a whole tribe. Why will intelligent men still go on talking three or four times a year to Indians on doctrinal subjects by means of a jargon which cannot express a single abstract idea, and the use of which throws ridicule on sacred things, and still call such work 'spreading the truths of Christianity'?" ("Alaska and its Resources," p. 111.)

The truth of the foregoing I can fully corroborate, and will add that it is an error to attempt definitely to convey to primitive peoples ideas of future rewards and punishments that are wholly opposed to their tastes and inclinations, and wholly unsuited to their modes of life. An Otchipwe, on being urged by a missionary to become a Christian that he might "go to heaven," replied that he had not the least desire to be one; that if he were a Christian he would prefer *Hades* to Heaven, because, in the former case, though in pain, he would be permitted to stand up and walk about, while in the latter he would be forced to sit still and sing psalms all day! And this reply was not given in jest or in mockery, but in sober earnest.

nounced he saw in the diseased limb not only the remaining worm and the pebble, but a *piece of iron, another stone, and a crooked nail*. No wonder the poor fellow was lame! With the aid of this "*powerful medicine*" the others had no difficulty in affirming the diagnosis, and accordingly it was determined to submit the sufferer to the ordeal of their united conjurations the next evening at the hour the moon would be full.†

The affair was not a success, however, owing to outside interference. It was scarce under way ere the clergyman, who somehow had got wind of the affair, burst into the assemblage and carried off the interpreter, and the following day sent him to the nearest civilized settlement for treatment; and to his great astonishment and sorrow, he discovered in the *Shams* four of his most promising converts, who, when upbraided for their duplicity, chaffed him, saying they had tried his *medicine* and found it "*ca-win-a-shin*,"—not much account.

All savages hold civilized medicine in unbounded respect, and withal, no little fear; and as physiological action or function is entirely beyond their comprehension, it is supposed our pharmaceutical products possess kindred action with their own amulets,—that they influence and secure the aid of spirits unknown to Indians: consequently they submit unquestioningly to the *dicta* of civilized physicians, providing they are not deemed inimical to their race.

An instrument or medicine-case is an object of never-ending reverence and awe, and more feared than even their own devil and Little-Men-haunted caverns; and a savage unfamiliar with civilized ways would prefer to risk a single-handed contest with a grizzly or polar bear than tempt the mysterious powers of a medicine-chest by lifting its cover. The mere display of powders and bottles, or the accidental dropping of the mystic word *medicine*, is usually sufficient to stampede an audience, who hasten to rid themselves of chance occult influences.

A laughable incident occurred at the Touchwood Hills (Manitoba) in 1858, during the presence of the Canadian commissioner, Mr. H. Youle Hinde. The half-breed wife of the local trader desired some adhesive-plaster, which Mr. Hinde undertook to supply from a

† The *fee* demanded in this instance was four bottles of *ishkodiwauboo ouiski* ("whiskey; fire-water") obtained from an illicit trader, four green blankets, four red blankets, and twenty pounds of tobacco, which was paid in advance.

box on which sat an Indian *Sham* and his novice. The woman inquired if it would be safe for her to remain in the room while the medicines were opened, and a joking negative from the husband caused her to quickly disappear. Next, the Indians, who had not understood the conversation, it being English, rose at the motion of Mr. Hinde, and watched his movements inquisitively; but no sooner was the box opened than they were taken as with a panic, rushed from the house, and hastening to the summit of a neighboring hill, there divested themselves of all clothing, and for hours sat squatting in the sun to await the deodorizing influences of breeze and solar rays.

Those, too, who have witnessed the repose and insensibility to pain brought about by narcotics and anæsthetics, hold such in idolatrous reverence, especially the latter. A physician of my acquaintance administered chloroform to perform an amputation upon a Dacotah brave, and the fame of the "*great medicine*" spread from the Mississippi to the Yellowstone, and thereafter he was constantly pestered by those who desired to possess a portion of the fluid. One young chief who had been particularly unfortunate in war and hunting expeditions, offered in exchange for the smallest quantity his horse and trappings, arms, twenty bison-skins, a new *tepté*, and, last but not least, his *squaw*! He was gotten rid of by an assurance the *medicine* would not stay with him, a few drops being given in a loosely-corked phial, which bore out the statement. The anxiety to possess the drug was with no desire of administering it, but under the supposition the spirit controlling so powerful a charm could not but lend favorable influence to the conjurations of its possessor.

It is generally supposed Indian tribes are comparatively free from disease, and this is frequently affirmed by intelligent men, who, oddly enough, appear to suppose that an absence of everything which civilization deems essential to existence—comfortable shelter, clothing, proper and sufficient food, etc.—must insure the savage man immunity from illness and death. No greater error can be imagined. Few of the human race, of any nation, clime, or condition of life, ever die from *old age*; and as my friend Dr. Winder, formerly physician to the *Wekimikong* Reserve (Great Manatoulin Island), was wont to remark, "A dead Indian in the wilds is by no means so great a rarity as a dead ass in the midst of European civilization!"

APPENDIX.

E.

A Romish priest, formerly a professor in the University of Louvain, a simple, honest, guileless man, whose acquaintance with Indian life and character extended over more than twenty years of missionary service in the wildest part of upper British Columbia and the west slope of the Rocky Mountains,—a man whose devotion and purity was such as to challenge the admiration of all, Catholic, Protestant, and pagan, white or savage, alike, and whose generous catholicity of spirit and graces of mind made him a companion at once charming and instructive,—during a discussion of savage psychomancy, remarked, "I have seen many exhibitions of power which my philosophy cannot explain, and have seen *medicine* tested in most conclusive ways. I once saw a Kootenai Indian, known as *Shookum-tama-herewos*, command a mountain sheep to fall dead, and the *creature then leaping among the rocks of the mountain-side fell instantly lifeless*. This I saw with my own eyes, and I ate of the animal afterwards. It was unwounded, healthy, and perfectly wild! Ah!" (and he shuddered as he spoke) "they seem to have power from Sathanus!"

F.

On one occasion a party of ten *voyageurs* set out from Fort Benton for the purpose of finding the Kaime or Blood-Band of Blackfeet, their route lying due north, crossing the boundary-line near *Nee-na-sa-ko* ("Chief Mountain") and *O-max-ten* ("Great Lake"), and extending indefinitely beyond the Saskatchewan and towards the tributaries of the Mackenzie and Coppermine Rivers. The expedition was perilous, and the danger became more imminent with each day's journey, war-trails, war-party fires, and similar indications of hostile bands constantly appearing in increased numbers. The adventurers soon found they were in the midst of the Cree war-party's operations (the Crees, friendly to the Hudson's Bay Company, were inimicable to American fur traders), and so full of danger was every day's travel that seven of the ten turned back. The others continued the journey until finally their resolution failed, and they determined to return after another day's travel to the northward. On the afternoon of the last day four Indians were seen who, after a cautious approach, made the sign of peace, laid down their arms, and came forward, announcing themselves as *Kaimes*. They were sent out, they said, by *Ma-gue-a-poos* (the "Wolf's Word") to find three whites, mounted on horses of a peculiar color, dressed in garments accurately delineated, and armed with weapons that they without seeing accurately described. The whole history of the expedition had been given to them by *Ma-gue-a-poos*. The purpose of the journey, the *personnel* of the party, the exact locality where to find the three who persevered, had been detailed by him with as much fidelity as could have been done by one of the whites themselves, and so convinced were the tribe of the truth of the seer's *medicine* that they sent these four young men to meet the whites and conduct them safely to a rendezvous more than a hundred miles away. On arrival the whites found the whole camp of "Rising Head," a noted war chief, awaiting them. The objects of the expedition were accomplished, and, after a few days, the traders returned to safer haunts. "I was at the head of this party of whites, and personally met the messengers," says J. Mason Browne, of the American Fur Company, "and upon

questioning the chief men of the Indian camp, many of whom afterwards became my warm personal friends, no suspicion could be had of the accuracy of the facts as related. Subsequent intimate acquaintance with *Ma-que-a-poo*s disclosed a *medicine* faculty as accurate as it was inexplicable, yet he never claimed the gift entitled him to any particular regard, except as an instrument of a power he did not pretend to understand." Of the facts as above related "he could give no explanation beyond the general one that he saw us coming and heard us talk on our journey, and he had not, during that time, been absent from the Indian camp." (*Atlantic Monthly*, July, 1866.)

The phenomena of "second sight" extensively obtains among the Blackfeet, Crees, Chepewyans, and Slavés. An aged uncle (by the mother's side) of the McKay boys, Scotch half-breeds well known in the earlier days of Manitoba, was famous for his powers, though not a *Sham*, and with no pretensions to *medicine*. His power was derived suddenly, remained a few years, and as unexpectedly disappeared. He neither dreamed, professed to see visions, nor to enter upon trance, but sat wrapped in apparent meditation, with partially-closed eyes, and repeated what he saw. He constantly directed hunters to where bison and other game could be found, never making an error in description or in fact. A man had the lock of his gun blown away while firing at a bison cow. Assisted by friends he searched everywhere in vain. The next morning the seer said to him, "The lock is ten yards away from where the cow fell, close to a badger-heap, and you will see it glisten in the sun as soon as you get near." And so it proved. Again, some horses that had been given up as irrecoverable, were found by his direction in an out-of-the-way place near Scratching River.

G.

One conjuror I knew intimately would allow himself to be bound hand and foot with rawhide thongs, the whole body enveloped in such a way as to pinion arms and hands to his sides, yet the instant a blanket was cast over him he would bound to his feet free, the bonds in his hands with the fastenings intact. Once I bound his naked form with powerful strips of green moose-hide, drawing them so tightly blood threatened to burst from the ridges of unimprisoned flesh, but it made not the least difference so far as I could discover. On another occasion, in the middle of the day, he was even more elaborately pinioned, wound and rewound, until he appeared an improvised mummy, employing knots and turns suggested by naval experience; and he passed from my hands into a small "*medicine* lodge," devoid of all furnishings save rattle and drum, erected in the midst of open prairie. Scarcely was he concealed from view when both instruments began a low accompaniment to a chant he sang, and the air all about became vocal with a multitude of noises and sounds, some high overhead, some apparently far away, and others in the grass at our feet. Bison bellowed, bears growled, wapiti stags roared, wolves howled, frogs croaked, horses neighed and galloped, dogs and foxes barked, serpents rattled and hissed, squirrels and hares rustled and squeaked, the cat tribes spat and swore, and even wild fowl flapped their wings and uttered their woted cries; not separately, but all in one chorus, constituting a feat of ventriloquism, if such it was, unparalleled. When the sounds subsided, *Wa-ah-poo*s ("The Rabbit") appeared at the entrance of the tent, while the bonds, for which diligent search was

made, were missing. Calling to him an Iroquois, an utter stranger to all but myself, and who had but the day before arrived from beyond the Great Lakes in Ontario, he directed him to a certain tree on a bluff a mile away, bidding him bring what would there be found suspended from a designated branch. The latter returned with what appeared to be the bonds intact, and had I not been assured of the impossibility of transporting them to that distance I would have had no hesitancy in believing they were those with which the conjuror had been bound, so exactly did every turn and knot appear to be my very own. A few days later the same wizard, while conjuring a squaw in the final stage of phthisis, suddenly thrust his hands beneath the blanket that enveloped her emaciated form, and dragged forth the carcass of a full-grown wolf, which he flung outside into the midst of assembled relatives and friends, by whom it was quickly pounded and trampled into an unrecognizable pulp. "The Rabbit" now announced the woman would recover; but, on the contrary, she died the same night, a result of which I had warned him, but only to obtain the response it "mattered little." He found a ready excuse in *another spirit*, a near relative of the first, who had unexpectedly returned from a long journey, and taken advantage of his (*Wa-ah-poo*s's) temporary absence to work its evil purpose. Where he obtained the wolf is beyond my conjecture. There was nothing of the kind beneath the blanket five minutes before it was brought to light, for I had just given the sufferer careful examination. There was but one other person within the lodge, the husband, collusion with whom was manifestly impossible. No person had passed in or out for above an hour, and the costume of the conjuror, merely a breech-clout and *medicine-bag*, offered no means of concealment. (*Popular Science Monthly*, September, 1886.)

H.



The "Black-Snake," a distinguished ornament of the tribe of Mountain Assiniboines (the only tribe save the Cherokees that possesses a written language), dwelt alone on a far northern branch of the Saskatchewan, revered for his gifts, feared for his power, and always approached with reluctance because of his austerity and taciturnity; moreover, he was difficult of access, and as vain and ambitious as he was haughty and contemptuous. Mr. Browne relates a trial of *medicine* that took place between him and a renowned *Sham* of a neighboring tribe in 1855, which I have subsequently heard verified by eye-witnesses whose veracity is unimpeachable. The rivals, in full paraphernalia, war-paint, and decorations, met in the midst of a concourse of more than two thousand people,—whites, Indians, and half-breeds. Both had prepared for the ordeal by long fasting and conjuration. After the pipe, which precedes all important councils, the *Shams* sat down opposite each other, a few feet apart. For some four hours they glared fiercely in each other's eyes, when the "Black Snake," observing his rival trembling and swaying from side to side, sprang to his feet, and pointing at him a black pebble worn suspended from the neck in lieu of a *medicine-bag*, stamped his foot and commanded he should "*Die*." The unfortunate for a few seconds swayed more violently, then fell over upon his side, lifeless! This purely psychical result gave the "Black Snake" a pre-eminence that extended throughout all the Northwest, even into the camps of his hereditary enemies; his word sufficed to prevent or procure war, and a message to his foes would at any moment

cause them to turn from the war-path. Poison, deception, or collusion, in this instance, are useless suggestions.

I.

"One man was so dangerously ill that it was thought necessary the conjurors should use some of those wonderful experiments for his recovery; one of them therefore consented to swallow a broad bayonet. . . . After a long preparatory discourse and the necessary conference with his familiar spirit, or 'shadows' as they call them, he advanced to the door and called for the bayonet, which was then ready prepared by having a string fastened to it, and a short piece of wood tied to the other end of the string to prevent him swallowing it. I could not help observing that the length of the piece of wood was not more than the breadth of the bayonet; however, as it answered the intended purpose, it did equally as well as if it had been a long hand-spike.

"Though I am not so credulous as to believe that the conjuror absolutely swallowed the bayonet, yet I must acknowledge that in the twinkling of an eye he conveyed it,—God knows where! and the small piece of wood, or one exactly like it, was confined close to his teeth. He then paraded backward and forward before the conjuring-house for a short time, when he feigned to be greatly disordered in his stomach and bowels, and after making many wry faces, and groaning most hideously, he put his body into several distorted attitudes very suitable to the occasion. He then returned to the door of the conjuring-house, and after making many strong efforts to vomit, by the help of the string he at length, and after tugging at it some time, produced the bayonet, which, apparently, he hauled out of his mouth, to the no small surprise of those present. He then looked around with an air of exultation, and strutting into the conjuring-house, renewed his incantations, and continued them without intermission for twenty-four hours. Though I was not close to his elbow when he performed the above feat, yet I thought myself (and I can assure my readers I was all attention) to have detected him. Indeed, I must confess it was a very nice piece of deception, especially as it was performed by a man quite naked. . . . The sick man, however, soon recovered." (Pp. 193, 194.) . . . "During our stay at Anaw'd Lake, as several of the Indians were sickly, the doctors undertook to administer relief; particularly to one man, who had been hauled on a sledge by his brother for two months. His disorder was the *dead palsy*, which affected one side from the crown of his head to the sole of his foot. Besides this dreadful disorder, he had some inward complaints, with a total loss of appetite, so that he was reduced to a mere skeleton, and so weak as to be scarcely capable of speaking. In this deplorable condition, he was laid in the centre of a large conjuring-house, and that nothing might be wanting towards his recovery, the same man who deceived me by swallowing a bayonet . . . now offered to swallow a large piece of board about the size of a barrel stave. . . . When he put it to his mouth it apparently slipped down his throat like lightning, and only left about three inches sticking without his lips; after walking backward and forward three times, he hauled it up again, and ran into the conjuring-house with great precipitation. This he did, to all appearance, with great ease and composure; and notwithstanding I was all attention on the occasion, I could not detect the deceit; and as to the reality of it being a piece of wood . . . I had it in my hand both before and immediately after the cere-

mony. . . . On the day preceding . . . I accidentally came across the conjuror . . . several miles from the tents . . . busily employed in shaping a piece of wood exactly like that part which stuck out of his mouth after he had pretended to swallow the remainder of the piece. The shape of the piece which I saw him making was this , which exactly resembled the forked end of the main piece, the shape of which was this, , so that when the attendants concealed the main piece, it was easy for him to stick the small point into his mouth. . . . My guide Matonabee, with all his other good sense, was so bigoted to the reality of those performances that he assured me in the strongest terms he had seen a man, who was then in company, swallow a child's cradle with as much ease as he could fold up a piece of paper and put it in his mouth; and that when he hauled it up again, not the mark of a tooth or any violence was to be discovered about it. . . . As soon as our conjuror had executed the above feat, and entered the conjuring-house as already mentioned, five other men and an old woman, all of whom were great professors of the art, stripped themselves quite naked and followed him, when they soon began to blow, suck, sing, and dance around the poor paralytic, and continued to do so for three days and four nights. . . . And it is truly wonderful, though the strictest truth, that when the poor sick man was taken from the conjuring-house he had not only recovered his appetite to an amazing degree, but was able to move all the fingers and toes of the side that had so long been dead. In three weeks he had recovered so far as to be capable of walking, and at the end of six weeks went a hunting for his family. . . . He accompanied me back to Prince of Wales Fort in 1772, and since that time has frequently visited the factory." (*Hearne's Journey*, pp. 213 to 220.)

RECTAL ALIMENTATION BY SUPPOSITORIES.

BY SAMUEL WESLEY GADD, M.D., PHILADELPHIA, PA.

RECTAL ALIMENTATION is frequently resorted to when the stomach is unable to bear food or digest it by reason of the various diseases to which the stomach is susceptible.

Before proceeding to speak of the application of rectal alimentation in the form of suppositories, it might be well for us briefly to consider the anatomy of the rectum, which is the place of immediate lodgment of the suppositories intended for alimentation.

This we find to be a continuation of the bowel, being really a part of it, lined with a mucous membrane containing a few solitary glands, surrounded by numerous blood-vessels which anastomose freely, causing it to be very vascular, and consequently very absorbent. Lymphatic vessels are also found here of large size. The sphincter ani also acts the part of a pylorus to this part, enabling it to

retain that which may be placed within it for a considerable length of time.

From these facts we deduce that the rectum is well constituted for absorbing substances, especially such substances as are diffusible or dialyzable. Not that the substances enter into the body exactly by means of dialysis, but that those substances which are dialyzable are more readily taken up by the blood than those which are not. Whilst the lower bowel—of which the rectum is a part—cannot perform the function of the stomach, namely, that of digestion, it can and does very well perform the functions of the small bowel, namely, assimilation or absorption, when called upon to do so.

Hence, if we administer to the lower bowel such foods as have been already digested, it can very readily appropriate the same to the blood.

Of course the amount of nourishment taken into the system is relatively small, but every physician knows what a small quantity at times, when the patient's life hangs as it were over the brink of the grave by a slender thread, is sufficient to tide him over the moment of wrestling for life, until his own strength begins to return and the normal functions again show their presence.

Recognizing, then, these facts, nutritive enemata are frequently resorted to in diseases of the stomach, or in such cases where the stomach or upper bowel demands rest, with very beneficial results, if not to the recovery of patients, at least to a considerable prolongation of life.

The use of nutrient suppositories has been suggested, but I believe they have not yet been brought to practical use. The consideration of this caused me to carry on some experiments with a view to the best manner of producing them.

Digestion really is the conversion of the articles we eat as food,—the most of which being as yet crude and incapable of being taken up by the blood,—by means of the gastric or pancreatic fluids, into such substances as shall be readily taken up by the blood, and by it readily appropriated to the demands of the system. Thus starch is changed into glucose, proteids into peptones. The pancreatic fluid is the most active in this change, and therefore the most important.

If, now, we act upon proteid matter with an artificial pancreatic fluid, which can be readily obtained from a fresh pancreas, under the same conditions by which digestion is effected in the stomach or duodenum, namely,

a temperature of about 100° F., and an alkaline medium in connection with pancreatic fluid, or an acid medium if the gastric fluid is engaged, we produce an artificial digestion, which is precisely identical, as far as it goes, with that performed by the stomach or pancreas in the duodenum.

For this purpose I proceeded to prepare a pancreatized extract of beef in the following manner :

I made use of liquor pancreaticus as representing pancreatine, made according to the method recommended by Mr. Bengier, of London, namely, by digesting the fresh pancreas in four times its weight of diluted alcohol. Of course the extract of pancreatine may be used with the same results, but I desire in this paper to speak of that method which is most easily performed by the ordinary pharmacist, so that he may be able to prepare the whole from beginning to ending.

After numerous experiments, I have decided upon the following as being the best method and the best proportions for making the extract of meat :

To sixteen ounces avoirdupois of finely-minced beef, off the rump, add one pint of water and two fluidounces of liquor pancreaticus and one drachm of sodium carbonate.

The mixture should be kept at a temperature of about 120° to 140° F., with occasional stirring from four to six hours, adding water from time to time as it becomes lost by evaporation. Then throw the whole upon a linen or muslin strainer, and express with gentle pressure. Neutralize the filtrate with hydrochloric acid in a porcelain dish, and, with a moderate degree of heat, evaporate down to the consistence of an extract, or, better, to dryness, if it can be accomplished without a high degree of heat. A much better preparation I think could be obtained by evaporating *in vacuo*. This extract of meat will keep well in a closed vessel, and represents thoroughly, if made with care, the nutritive value of the meat.

By operating in this manner upon different samples of beef, I found that the resulting extract varied from two hundred and ninety grains to four hundred and fifty grains to the pound of beef used. This average weight excludes the amount of sodium chloride present formed by neutralizing the sodium carbonate with hydrochloric acid.

Various substances have been used as a base for suppositories, such as tallow, starch and glycerin, cacao butter, glycerin and gelatin, etc. The cacao butter is that which is

most frequently used in this country, chiefly because of its cheapness and the ease it admits of manipulation. But in my hands, after various experiments, the superiority rests with the mixture of gelatin and glycerin, which, for convenience, we will call *glycogelatin*.

Glycogelatin is made by taking one ounce avoirdupois of pure gelatin; cause it to become soft by soaking in one fluidounce of water until the whole of the water has become absorbed. Dissolve this in three and a half fluidounces of glycerin by means of a water-bath, and allow the mass to cool and solidify.

When ordering suppositories this can be prescribed for, just as cacao butter is, and should be manipulated in precisely the same manner. They are, I confess, a little more tedious to prepare than those made with cacao butter, but the superiority of the glycogelatin suppositories is sufficient to warrant the physician in demanding this kind, although it may require an extra amount of labor on the part of the pharmacist in their preparation.

If cacao butter suppositories that have been made for some time be examined they will be seen to be coated with a powder of a whitish color, which is the result of the oxidation or rancidifying of the cacao butter, and if introduced into the rectum may produce a certain amount of irritation. Whereas I have before me now glycogelatin suppositories of morphine, and of quinine and opium, which I made several months ago, and which appear to-day as sweet as when first turned out of the mould.

If the suppositories are made up as they are written for, this objection would be obviated; but in medicine it is always well to provide against all possibilities which might prove detrimental to the object sought for by the medicines employed.

Now, to make the pancreatized extract of meat into suppositories, first rub up the extract with a few drops of water in a mortar which has been previously warmed until it becomes uniformly smooth. Next add the glycogelatin or cacao butter in a fused condition; stir the whole until it is about to congeal; then pour into moulds of a suitable size.

These may be from the "baby" size, weighing fifteen grains, to the larger size of forty-five grains each.

When using cacao butter I found that by incorporating a small amount of wax with the cacao butter—and for this purpose the yellow is better than the white—a larger amount of the extract of meat can be used without materially affecting the melting of the suppository at the temperature of the rectum.

The dried extract of meat will keep perfectly sweet for a long time in a closed vessel.

When nutrient suppositories are desired they may be prescribed for thus:

R Extracti carnis pancreatici, gr. c;
Olei theobromæ, vel
Glycogelatinæ, q.s.
Ft. suppositor. x.

By ordering in this form the amount of ol. theobromæ or of glycogelatin can be regulated by the pharmacist to the size of his suppository mould, and the physician, by ordering a definite quantity of extract of meat, made up into a definite number of suppositories, will be cognizant of the strength of each, and can determine how many should be used in a given time.

As I have before stated, if the suppositories are used while they are fresh it makes little difference whether cacao butter or glycogelatin be used.

There is an important point to be observed in the use of suppositories of any kind, namely, that of oiling them before introducing them. This is more essential with those made with glycogelatin than those made with cacao butter. With the latter, however, it may scarcely be necessary to do so in warm weather; but if in winter, or if extra hard, or if covered with a dusting powder, which is often done unthinkingly by the pharmacist, or if the anus be inflamed, fissured, etc., as is often the case, the introduction of a suppository not previously oiled will give some discomfort.

This I know is not generally considered by physicians, but as I have learned it by experimental experience I deem it of sufficient importance to be mentioned in this paper.

Such a method of performing rectal alimentation would bring the manufacture of such within the domain of pharmacists rather than that of domestic preparation, and to some minds may appear to be too expensive, yet the cost would not be so much if prescribed for in quantity.

The advantages of this form of alimentation are self-evident. The suppositories will keep any reasonable length of time, which cannot be said of the liquid injections. Less care is required in their introduction than when a syringe is used, and this in the hands of a careless nurse may do harm to the rectum of the patient.

Greater ease of introduction, as well as less exposure, are also points of not small importance.

SOME POINTS IN THE PATHOLOGY AND TREATMENT OF FEVER.

At a meeting of the Manchester Medical Society, held March 2, 1887, DR. JAMES NIVEN read a paper on the above subject. The points considered were formulated in four propositions:

1. Self-protective fevers tend to become milder the longer they are settled in a community. The protection conferred was regarded as an adjustment of the tissues, which would be handed down from generation to generation in the case of any disease which was spread over the greater part of a community. In co operation with this adjustment is the elimination by death of people specially liable to the disease. In opposition to it is the tendency of children to take disease in the same manner as the parent. As illustrations were considered typhoid fever, measles, small-pox, yellow fever, and syphilis.

2. The second proposition was that the phenomena of fever are probably due in the main to chemical poisons. It was attempted to be shown that chemical matters secreted by the fungi or dead fungi were sufficient to account for the phenomena of fevers, while in some diseases it was taken as proved that only chemical poisons were admitted into the circulation.

3. The third proposition was that the nervous system is the liberator and controller of heat in fever. It was contended that a large amount of heat was due to metabolism of muscle, but the experiments of Pflüger and Samuel had shown that muscle, under normal circumstances, underwent this metabolism as the effect of nervous impulses. While admitting the vaso-motor system and heat-inhibitory centres as probable causes of some pyrexial conditions, it was suggested that excitation of the anterior cornual cells in the spinal cord, and of their congeners in the medulla and brain, would better explain the pyrexial conditions of such fevers as typhoid and typhus. Reasons were given for regarding the figures arrived at by Dr. Burdon Sanderson, from calculation of the excreta in health and in fever, as showing an increase in fever of heat requiring to be eliminated.

4. The fourth proposition was that the proper treatment of fevers is partly dietetic, partly calmative. The treatment on these lines was sketched. Easily assimilable materials, such as peptonized meat and milk, and sugared fruit, are necessary to maintain the strength, and to prevent complications and

tropho-neuroses; perforation in typhoid may be regarded as in part a tropho-neurosis. Calmative treatment, such as a skilful nurse, free from fuss, removal of irritations, and antipyretic treatment, are necessary for the same objects. Antifebrin was regarded as, perhaps, the best antipyretic.—*British Medical Journal*, March 19, 1887.

TREATMENT OF HEMORRHAGE FROM THE TONGUE.

At a meeting of the Medical Society of London, held Monday, April 18, 1887, MR. LOCKWOOD (*Lancet*, April 23, 1887) read a paper on a "Mode of restraining Hemorrhage during Operations upon the Tongue." After speaking of the serious nature of that accident, the various plans which had been devised to prevent it were mentioned. None of these seemed to be quite free from objection, although all were more or less efficacious. After discussing the anatomy of the lingual artery, it was concluded that, at the place where the vessel lay upon the side of the pharynx near the greater cornu of the hyoid bone, the depth of tissues was so small that there could be no difficulty in compressing the vessel. The great constancy of the course of the vessel lent itself to this proposal. Forceps were then described which had been devised after a great many experiments upon the dead body. These instruments were quite efficient in preventing the passage of thin injection through the lingual artery. They were so arranged that one blade passed by the side of the tongue into the pharynx, while the other was bent to fit the contour of the lower jaw, and met the other near the tip of the greater cornu of the hyoid bone. Dissections had been made after the forceps had been adjusted, which showed that the artery was tightly grasped and impermeable. A case was then described in which Mr. Lockwood had removed half the tongue while the forceps were in position. The tongue was split down the median septum and then removed with scissors. The lingual artery did not pulsate or bleed, and the operation was rapid and bloodless. Other cases were then described in which Mr. Willett had used the forceps; and, in conclusion, it was thought that there was a sufficient amount of evidence to show that the lingual artery might be easily and safely compressed.

The Therapeutic Gazette

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DETROIT, MICH., May 16, 1887.

GEO. S. DAVIS, Medical Publisher, Box 470.

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Leading Articles.

SULPHURETTED HYDROGEN.

IN the last issue of the THERAPEUTIC GAZETTE Dr. H. C. Wood published an article upon the use of sulphuretted hydrogen in phthisis, giving a *résumé* of the results which so far have been reached in the use of the remedy, and contending that its effects upon the general system were the same when given by the mouth as when injected into the bowels.

That the sulphuretted hydrogen given by the mouth has the same general effect as when given by the bowels seems to us self-evident; in each case the remedy must enter the portal vein and through it be distributed to the general circulation. Dr. Wood's clinical experience confirms this, excepting in so far as it indicates that the absorption from the stomach is more certain and definite than from the bowels. A pronounced odor upon the breath of patients who have taken the gaseous enema is not common, but within a few minutes after taking a full dose of the sulphuretted hydrogen water the fetor of the breath is usually very disagreeable. The dose of the saturated solution is one ounce, taken from

three to five times a day; preferably in carbonic-acid water, as suggested by Dr. Wood.

The remedy seems to be very important in the treatment of pulmonic catarrhal inflammations, but there is still no strong evidence that it has any specific action in phthisis. We have known cases of severe chronic cystitis rapidly cured by the use of natural sulphur waters, and it is probable that the artificial sulphuretted hydrogen water will be found efficacious in catarrh of the bladder. It also ought to be tried in chronic intestinal catarrhs.

Artificial sulphuretted hydrogen solution has a very pronounced tendency to undergo decomposition with the deposition of sulphur. It is possible that chloride of sodium or other mineral salts added to the water would tend to prevent this, since the natural waters long retain their sulphur. Experiments are, however, necessary to decide the truth of this surmise.

A little carelessness in the preparation of sulphuretted hydrogen water also causes it to be very weak in the gas, so that a much more uniform and active preparation can be obtained by the patient making it carefully at home than by purchasing it of a careless apothecary. For this purpose, at the suggestion of Dr. Wood, an apparatus has been devised and prepared by Dr. Marshall, of the chemical laboratory of the University of Pennsylvania. The apparatus should be kept in a cellar or other cool place, and at least every other day the necessary amount of the sulphuretted hydrogen water should be made.

With the apparatus are furnished the necessary chemicals and the printed directions for use. Moreover, Dr. Marshall has so calculated and arranged the mixtures that the water is simultaneously impregnated with carbonic acid and sulphuretted hydrogen. The liquid obtained has a sweetish not at all unpleasant taste.*

METHYLAL.

IN our April issue, page 269, we referred to the experiments made by Dr. B. W. Richardson as to the employment of methylal as a hypnotic. Since the appearance of this paper several articles on the subject have come under our attention, which extend our knowledge as to the action of this substance and enable us

* The price of the apparatus, boxed for shipment, is five dollars. It will be furnished on application by letter, by Dr. Marshall. Address Chemical Laboratory University of Pennsylvania, Philadelphia.

to determine its position with greater accuracy. Methylal or dimethylether was discovered in 1839 by Malaguti, and it belongs to the group of acitals. Its formula is $C_2H_5O_2$. It is soluble in water, alcohol, ethereal and fixed oils, is colorless, with a slightly acid reaction, and has an odor similar to that of chloroform and acetic ether.

Mairel and Combemale have reported in a recent meeting of the French Academy of Sciences the result of their experiments as to the physiological action of this drug. In a dose varying from $3\frac{1}{2}$ to $7\frac{1}{2}$ grains to each two pounds of body weight, these authors noted that it produced a slight degree of salivation and almost invariably quiet sleep within an hour after the injection (and they make note that hypodermic injections also appear to cause pain, and, if frequently repeated, ulcerations), lasting for six hours or more. When the dose is doubled, sleep, according to them, becomes profound. The pupil becomes dilated, the pulse increased in frequency, the salivation extremely marked, while it is almost impossible to arouse animals. These phenomena disappear after a few hours, and the sleep then appears to be natural, and a slight fall of temperature may be noted. If the dose is increased to 2 grammes for each kilogramme of body weight two distinct phases of the resulting symptoms may be recognized. In the first appear somnolence and paralytic phenomena, especially marked in the posterior extremities, and gradually becoming general, muscular insensibility, and then spontaneous convulsions, followed by diminution in general sensibility, fall of temperature, and increase in the frequency of the pulse and slight dyspnœa. Two or three hours after the commencement of the experiments the second stage appears. At this period most of the above-described morbid phenomena have disappeared, and now profound sleep is the sole remaining symptom. This, after a number of hours, passes off, and the animal recovers, but remains in a state of profound depression for several days. With still larger doses the gravity of the symptoms is increased, and death may follow, when a post-mortem examination will reveal general congestion of the brain and spinal marrow, local hemorrhages in the pulmonary tissue and renal congestion.

If given by the stomach, the same symptoms are produced by the same doses, but after a longer interval. Administered by inhalation, the authors likewise appear to have succeeded in producing unconsciousness, and

accompanied by great irritation of the ocular, nasal, and bronchial mucous membrane.

Personalì, according to the Paris correspondent of the *British Medical Journal*, April 16, 1887, likewise succeeded in producing sleep in frogs after a dose equal to fifty per cent. of their own weight; in rabbits, only twenty-five per cent.; in birds, twenty per cent.; and in dogs, ten to fifteen per cent. only was required. This author likewise found that methylal, while being rapidly eliminated, increased the action of the heart, while reducing the blood-pressure and also the temperature. These results would appear to prove that whatever be the mode of administration the general effects produced by methylal are about the same, although sleep is produced more rapidly when administered hypodermically or by inhalation than when given by the stomach. Their experiments do not, however, seem to have clearly established the fact that the somnolence produced by methylal is accompanied by sufficient anæsthesia to permit of its employment in surgical operations, and we would recall here that Dr. Richardson failed entirely in anæsthetizing animals with this substance.

Again, it is desirable to determine whether methylal is of value as a hypnotic where it is desirable to remove pain. The experiments of Mairel and Combemale would seem to indicate that this is a fact, and they believe that they are warranted in recommending it on account of the rapidity of its elimination by the lungs, and on the absence of disagreeable symptoms when its effects pass off, added to the fact that it is not accumulative in its action and is of slight toxicity.

Further experiments are desirable to determine the exact position which this drug should occupy. At present it seems best to keep it among the anodyne antispasmodics where Dr. Richardson placed it.

Personalì claims that methylal may be of value as an antidote for strychnine, and he states that if administered to a warm-blooded animal at the beginning of a strychnine-poisoning the convulsions are checked, and the poison being eliminated, the animal may recover. In the case of a cold-blooded animal, where the elimination is accomplished much more slowly, the toxic phenomena are suspended while the action of the methylal lasts, and may reappear when it has ceased.

In our April number we gave a number of modes of administration of this drug. The indications of its employment, as far as yet determined, are those which would call for

any anodyne antispasmodic, and it therefore may be employed in angina pectoris, colic, tetanus, etc. It may be given mixed with syrup in doses of about 1 fluidrachm. It has been recommended as an application for toothache, or as a liniment, in which eighty-five parts of the excipient is prepared with fifteen of methylal.

CARICA PAPAYA AS A GALACTAGOGUE.

TO us at least the employment of carica papaya as a stimulant to the mammary secretion is a novelty. We are familiar with its employment as a digestive ferment, and in a recent number have alluded to the insufficiency of the experimental data on which this employment rests. Recently the Royal Society of New South Wales appointed a committee for inquiring into the properties of this drug, and they have published a short analysis of their report in the *Australasian Medical Gazette* for February, 1887. Their experiments were made with the liquid extract containing not more than four per cent. of alcohol, a tincture of the ordinary Pharmacopœia strength, and a solid extract of a gelatinous consistency. Their experiments appear to show that the mammary secretion could be stimulated, in cases where the flow had commenced to fail, either by the internal administration of the drug or by topical applications. It is even claimed that in the virgin breast it can call forth a limpid secretion, but that this effect is merely transitory.

The committee appear to claim without reserve the greatest efficiency for carica papaya as a galactagogue. They have also noticed that when administered to pregnant patients it acts as an abortifacient.

The committee have likewise made a few experiments as regards its digestive power on meat, and while admitting that they were not considered satisfactory, the opinion was expressed that such power as was generally attributed to the drug in this particular was exerted on the sarcolemma, the muscle-cell or contents of the sarcous particles becoming released and exposed to the thorough action of the gastric juices. It was found to have no solvent action on albumen, a statement which in our opinion strongly supports our scepticism in its digestive properties.

Carica papaya, however, like many other examples that could be named, is perhaps only an example of the difference in efficiency of different preparations of the same article. We do not feel prepared to deny the presence

in carica of a ferment which under certain conditions may accomplish the solution of proteids. The only point that we would make is that the conditions under which it should be prepared and under which its activity is exerted are not yet recognized with sufficient certainty to warrant any indications for its employment.

THE NON-IDENTITY OF CAFFEINE AND THEINE.

THE non-identity of caffeine and theine, first pointed out we believe by Dr. Mays in the columns of the *GAZETTE*, has been substantiated by a paper recently read before the Royal Society, quoted by the *British Medical Journal*, April 9, 1887, by Drs. Lauder Brunton and Cash. These authors have found that theine produced a peculiar rhythmical contraction in voluntary muscles lasting for many hours. Both theine and caffeine tend to cause contraction of the muscles somewhat resembling rigor mortis. In one case the authors found that theine produced elongation of the muscle, with rhythmical movements. This phenomenon is very hard to explain on the supposition that muscular fibre contracts only in a longitudinal direction; and they suggest that possibly there might be a transverse contraction as well, which would cause elongation of the whole muscle.

THE TREATMENT OF DIPHTHERIA.

NO disease is more dreaded in the family circle and by the practitioner than diphtheria, and probably there are few affections whose therapeutics are more diverse. Diversity of treatment is the seal of unsatisfactory results, for when any treatment is assured in its effects its employment becomes universal: witness quinine *versus* malarial fevers. During the past we have ourselves settled upon a uniform method of treatment of diphtheria with results which certainly lead us to cleave fast to it, and to abandon the older plan of relying upon the combination of tincture of the chloride of iron and chlorate of potassium, a mixture whose usefulness is very doubtful. The primary and probably the most important part of the treatment is the free use of local remedies, of which Monsel's solution is, according to our thinking, the most efficacious. It should be painted very freely over the affected parts every four hours,

either undiluted or diluted with an equal bulk of glycerin. It is essential to exercise a certain amount of care and not have the brush so wet that the solution will trickle into the larynx, unless, indeed, this organ has been invaded by the disease. Next to the local treatment comes the administration of mercurials. We have so frequently seen an apparently severe attack of diphtheria abruptly aborted in its inception under the influence of large doses of calomel that we can scarcely believe that the drug has no pronounced effect. A grain of it should be put dry in the mouth of the child every hour or two until frequent very loose liquid evacuations are produced. In diphtheritic, as in other forms of angina, tincture of belladonna has seemed to us to also exert an almost specific effect. In the treatment of severe ordinary sore throat our routine plan is the free local application of the solution of subsulphate of iron, diluted or undiluted according to the exigencies of the case, the administration of mercurials in the manner just described, and the use of belladonna, 5 drops of the tincture every two to four hours according to the age of the patient. The results which we have obtained in simple sore throat indicate that in diphtheria the treatment acts not by any specific influence upon the disease-germ, but by curing a local sore throat, which is the initial lesion of diphtheria, and causes through a septic poisoning the constitutional disturbance. As a specific antiseptic medication we have used the oil of eucalyptus with apparent advantage. It should be placed in small shallow vessels near to the patient, and a sufficient heat be steadily maintained to keep the liquid boiling. In this way large quantities of the eucalyptus oil can be volatilized and the respiratory passages be perpetually bathed with the antiseptic.

In 1882, Dr. Delthil reported to one of the medical societies of Paris very pronounced results as obtained in the treatment of diphtheria by the use of inhalations of turpentine. Dr. Delthil burned continually in the sick-room a mixture of 1 kilogramme (two pounds) of coal-tar, 8 tablespoonfuls of oil of turpentine, 8 grammes (two drachms) of resin of benzoin, and 100 grammes (three and a half ounces) of cajeput oil; or a mixture of 200 grammes (seven ounces) of coal-tar, and 80 grammes (two ounces and six drachms) of oil of turpentine. It is asserted that the vapors will not cause coughing, and are generally well borne both by the patient and his attendants, and that they will dissolve the exudations and arrest the diphtheritic process in its

progress, and will assist the effects and materially secure the success of tracheotomy, if such procedure becomes necessary.

Dr. Schenker has recently been experimenting upon thirty-six cases with the method of Dr. Delthil. At first he followed Dr. Delthil's directions exactly, but on account of the inconvenience produced by the black smoke-flakes which filled the room, he subsequently employed the rectified oil of turpentine alone. An ounce to an ounce and a half of this oil were burnt every three to five hours, the doors and windows of the apartment being closed. After half an hour the windows were opened in order to admit fresh air. Coming to the conclusion that the good achieved was due to the general and not to the local action of the turpentine, Dr. Schenker gave oil of turpentine internally, as he believed, to advantage, but as the vapors of burning turpentine were still used, it is very doubtful how much of the achieved good was due to the internal administration of the drug. The results are asserted to have been extremely encouraging. It is somewhat remarkable that recovery was secured in each of the four cases in which tracheotomy became necessary. Before and after the operation the vapors were steadily employed. The urine of each patient was examined every other day, but no albumen at any time was found, nor was the alimentary canal perceptibly affected. Dr. Siegel, of Stuttgart, has also recently affirmed the value of turpentine in the treatment of diphtheria.

Reports on Therapeutic Progress.

THE PATHOLOGY AND TREATMENT OF EPILEPSY.

An interesting discussion took place at a meeting of the New York Academy of Medicine, held March 3, 1887, on the above subject, which was opened by a paper by Dr. W. H. THOMSON, based on notes of sixty consecutive cases in private practice (*The Medical Record*, March 19, 1887). Dr. Thomson did not consider epilepsy as necessarily a convulsive disorder. He gave the following definition:

Epilepsy is a disease characterized by sudden and temporary loss of function on the part of one or more cerebral centres, an attack being induced by an afferent impression in every case.

The essential and invariable element in epilepsy is suddenness. It is the single truly

sudden disease. Other diseases may be rapid in their attack, but never sudden in the sense that epilepsy is. Among the neuralgias, angina pectoris may be an exception. Therefore all recurrent symptoms, whether sensory or motor, which are characterized by suddenness are ominous, because suggestive of epilepsy. Consequently *petit mal* was more real, as well as more objectionable, than *grand mal*.

Dr. Thomson then reviewed some of the theories that have been advanced with reference to epilepsy, as Hughlings Jackson's theory of the explosive discharge of nerve-cells from increased functional activity or increased nutrition; disturbance of Nothnagel's convulsive centre in the medulla; Robertson's upward discharge from this centre; Gower's involved theory, etc. The conclusion reached was, that all normal motor phenomena, except the purely voluntary, were directly regulated by the sensory department of the nervous system in all those respects which imply regulation of degree of the motor forces, and regulation of the time of their liberation and the channels through which these are liberated, whether singly or co-ordinated.

Given a moderate restraint of nerve-cells and centres by each other, and we have the status of bricks in an arch; but withdraw one brick, and the arch may behave as if shaken by an earthquake, when the disturbance all came from the sudden loss of the function of one brick.

The objection to the explosive sensory-motor theory was that it required more than one mechanism for the production of the same effect. The answer to the claim that Hitzig has produced epilepsy by limited motor excitation alone, and that it has been caused by irritation of the cortical motor area alone, etc., was that we do not get rid of the sensory-motor relations when the cranium is entered.

As to the *treatment of epilepsy*, Dr. Thomson emphasized the great importance of *perseverance*, for many obstinate cases had finally yielded. The first indication was to *improve nerve-nutrition*, and the most efficient agent that could be employed for this purpose was *cod-liver oil*. The prophylactic influence of this remedy was very noteworthy with reference to nervous diseases occurring in neurotic families, and particularly epilepsy.

The next remedy recommended for nerve-nutrition was *phosphorus*; the syrup of the hypophosphites (U.S.) acidulated by addition of one-fifth part of dilute phosphoric acid.

Total exclusion of butcher's meat for two years should be insisted upon; animal diet predisposes to convulsions and convulsive diseases.

Check rapid eating, because of the liability to irritate the convulsive centre in the medulla through the influence of crossing nerve-fibres.

The *bromides* are the most efficient remedial agents for the control of the attacks. These are to be aided by remedies which prevent them from impoverishing the blood, and they may be assisted very materially in producing their peripheral action by the use of the *red-pepper or mustard pack* before going to bed. Add a teaspoonful of red pepper to a pint of hot water, and wrap the body in flannel wet with a solution of this strength.

When muscular twitchings of the face occur during sleep, he regarded them as evidence of persistent cortical irritation, and advised the use of corrosive sublimate in doses of $\frac{1}{4}$ of a grain.

When symptoms referable to the digestive tract were present, *belladonna* with *oxide of zinc* should be used, pushing the belladonna to the production of its physiological effects.

When foul breath accompanies the gastric disturbance, *resin of turpentine* should be given as an antiseptic with belladonna.

The continuous use of *chloral hydrate* was beneficial. *Digitalis* was indicated when epilepsy was characterized by symptoms belonging to the genito-urinary tract, or by vascular symptoms.

The discussion was opened by Dr. L. PUTZEL, who, from a clinical stand-point, thought that the claim that epileptic attacks were always sudden could not be sustained, as it was not at all infrequent for prodromata, gastro-intestinal, mental, or otherwise, to precede the outbreak for two or three days. The suddenness of the attack could not be regarded as characteristic and the essential of epilepsy.

He had always understood that Jackson's theory referred to the explosive discharge of nerve-cells, not implying that it is limited to the motor nerve-cells. According to Jackson the visual disturbances in migraine are really epileptiform, and he claims that migraine belongs to that class of disorders. This proves that he does not limit the explosive discharge to the motor cells. Furthermore, Dr. Putzel could not understand what there was that led Dr. Thomson to believe that sensory impulses inhibit motor impulses; for a sensory impulse is generally a stimulus that sets a motor impulse into activity.

He thought that the paralytic attacks of *petit mal* were rare. The paralytic conditions were usually seen after severe motor convulsions, and were then probably due to exhaustion.

The pleural epilepsy which had been referred to by Dr. Thomson, produced by injections into the pleural cavity, did not strike him as valuable for the purposes of argument, because there was nothing to prove that the convulsions were epileptic. He did not think that the single manifestation of anything was epileptic; it was epileptiform, but not until it had been developed several times could it be regarded as true epilepsy. Convulsions from teething, which were probably due to local irritation, were not epileptic, but epileptiform, although the mechanism was probably similar to true epileptic attacks. In the one, however, there was a purely local lesion, which gave rise to reflex action by general brain-discharge; while there was in the other case some unknown condition of the brain itself, probably in the higher centres, which was the fundamental lesion—if what cannot be seen may be called a lesion—of epilepsy.

With regard to belladonna, he had used it in nocturnal epilepsy chiefly, in conjunction with the bromides. He agreed with Dr. Thomson that the disease was one of impaired nutrition, and therefore he prescribed cod-liver oil.

DR. PUTNAM-JACOBI referred to the question of rapid mastication, in connection with Lauder Brunton's directions that the fainting person be induced to sip cold water for the purpose of arousing him from syncope. According to Gowers, the aura, in about one-fifth of the cases of epilepsy, is of the special senses, which indicates that the lesion is cortical. The statement made by Dr. Putzel concerning paralytic conditions seemed to be contradicted by Gowers, who cites one or two cases in which there was a sudden loss of motor power.

DR. W. H. DRAPER said that he had listened to Dr. Thomson's paper with much pleasure, though he could not say that the author had thrown much light on an obscure subject by his ingenious theory, or that he had seriously shaken existing hypotheses as to the pathology of epilepsy. He believed that it was generally admitted that a large proportion of attacks probably had their origin in the convulsive centres of the cerebral hemispheres, and it was thus easy to account for the temporary aphasia and other transient psychical and sensory auras which

sometimes preceded or even occurred without the motor discharge.

The question of the determining cause of the phenomena of an epileptic attack, whether it is the result of vaso-motor spasm or not, is still undecided; and Dr. Thomson's hypothesis that it is a withdrawal of the control which the sensory functions of the nervous system exert over the motor functions does not appear to make the cause more clear. Dr. Draper agreed with Dr. Putzel in believing that it was not right to regard convulsions of peripheral origin, like the convulsions of dentition and gastro-intestinal irritation, as the exact parallel, pathologically, of idiopathic epilepsy, except in so far as they might both involve a sensory cause. He cordially concurred in what Dr. Thomson had said in regard to the treatment of epilepsy, and especially as to the importance of improving the nutrition of the nervous centres by cod-liver oil and tonics. He thought that, next to this, the most important point in the management of the disease was a careful study of the possible peripheral irritations which might provoke the attacks. These were very often found in errors of diet. He could not agree with Dr. Thomson, however, in what he had said about the exclusion of animal food from the diet of epileptics. On the contrary, he had been inclined to believe that the gastro-intestinal irritations which were the exciting causes of epileptic seizures were much more likely to follow the indigestions caused by overfeeding with the carbo-hydrates and fermented liquors. He preferred a diet of milk and animal foods for his patients, and had had excellent success in diminishing the frequency of the seizures by regulating the diet upon this principle. The next important point in the treatment of the disease was, of course, the administration of some drug which would diminish the extreme irritability of the convulsive centres; for this purpose no remedy had yet been discovered which equalled in certainty and in power the potassic bromide. Yet, despite all these measures, the experience of every physician would recall cases in which every form of treatment failed to control the disease, cases in which the patients preferred to have their fits rather than suffer the self-denials imposed by dietetic restrictions, and especially the misery of mental and physical hebetude caused by large doses of the bromides.

DR. E. D. HUDSON thought that the most plausible explanation of an epileptic attack was found in an initial condition of cerebral

anæmia, due to spasmodic contraction of the cerebral vessels, that gives rise to disturbance of the equilibrium of the nerve-force. He believed that convulsive attacks might become true epilepsy if allowed to persist. The best remedies at our command are the bromides.

DR. THOMSON said he never intended to imply that epileptic attacks had no prodromata. But a prodroma was not an attack. His reference was to the actual steps in the attack, and in those epilepsy was to be distinguished from all other diseases by its suddenness.

With regard to Hughlings Jackson's theory, he would say that he had understood that, while its author does not refer to motor discharge only, he specially dwells upon the motor discharge as the cause of the convulsive attack.

As to a sensory influence being stimulating in character, he should regard it as regulating the character by some kind of withdrawal or directing of motor impulse.

With reference to confounding all convulsions with epilepsy, his own observations had led him to the conclusion that he was unable to distinguish between convulsions of epilepsy in children and epileptic attacks occurring in dentition. He would be exceedingly obliged if either Dr. Putzel or Dr. Draper would tell him what an epileptiform convulsion was.

DR. DRAPER said that, in saying that a convulsion was epileptiform, he simply conveyed the idea that it had the form of epilepsy, but not the substance or nature of it. He thought there was an essential difference between epilepsy in its most aggravated form and an epileptiform spasm as the result of either extreme peripheral irritation or extreme central excitability.

DR. A. D. ROCKWELL then read a paper on

THE VALUE OF ELECTRICITY IN THE TREATMENT OF EPILEPSY,

in which he said that, if he were asked whether, under any circumstances, electricity alone was capable of curing epilepsy, his answer necessarily would be, exceedingly doubtful. Although he had never heard of a case that had been cured by electricity, he was not prepared, by any means, to say that such a result was impossible, or even highly improbable. If, however, he should be asked whether or not electricity was of any value in the treatment of epilepsy, he would unhesitatingly and confidently say that it was. He felt warranted, from his own experience, in

going even further than that, and was willing to say that in a certain proportion of cases in which the patients fail to receive more than temporary benefit from the bromides they may recover entirely when this plan of treatment is reinforced by the judicious and persistent application of electricity. What this proportion is must be a question for further and more general investigation.

Epilepsy is not, like chorea, frequently self-curative, and the books and journals say that benefit attends the use of a score or more of different remedies. Many of them are undoubtedly of value in treating the disease, and in some cases effect an absolute cure. Electricity has been found to act favorably upon the epileptic seizures; but what should more especially entitle it to consideration was its peculiar efficacy associated with other and more generally approved remedies, after these remedies alone had failed to give more than temporary relief.

The suggestion that the best results will be obtained in the treatment of epilepsy only when we call to our aid every measure that tends to develop vital power is one which commends itself to all. It is not alone, therefore, on the theory of the special influence on the nervous centres, or on cerebral circulation, that we employ electricity as an adjuvant to the bromides, but also because of its undoubted powerful constitutional effects. Above all, it is a *tonic*, and yet its therapeutical range is sufficiently wide to include both stimulating and sedative effects.

Therapeutically speaking, there are indications for the use of electricity in epilepsy other than those which call for its general tonic influence or its effects on the circulation.

An important indication for its use is the hyperexcitability of the nerve-cells in epilepsy. By submitting theoretical considerations to practical tests he had been convinced that this hyperexcitability, in some cases, has been held in check by the action of the galvanic current as readily as by the bromides. In several cases of *petit mal*, especially, he had observed that applications of the galvanic current to the cervical ganglia of the sympathetic produced precisely the same effect, in interrupting temporarily the frequency of the paroxysms, as did the bromide of potassium.

An illustrative case was cited, in which treatment, electrical and medicinal, was persevered in for fifteen years, and, up to this date, nearly four years from the last epileptic seizure, the patient—a woman who was 26 years of age when the first attack occurred—

had been entirely free from even a suggestion of epilepsy. From being hysterical, passionately unreasonable, and personally unattractive, the graces characteristic of the best feminine type had been either restored or come as a new growth. Three other cases also were reported, in which electricity, combined with other measures, had produced markedly good results.

Dr. Rockwell then presented the unsatisfactory side of the picture. The total number of cases of epilepsy which he had treated, with especial reference to the value of electricity, since 1874, was twenty-eight. All were in private patients. Ten abandoned treatment too quickly to be worthy of the slightest consideration in a statistical estimate of the value of any remedy. In three cases the treatment was persisted in sufficiently long to enable him to give electricity a fair trial, and he was compelled to admit that it seemed in no way to aid the bromides in controlling the disease. It was to be noted that in two of these three cases the seizure occurred in the daytime and while awake, and in the other the attacks took place both night and day.

Eight other cases, of which he had records, were under observation from six weeks to nine months. In all of them good effects of the treatment were manifest in a greater or less degree; and in two of them, one of which was under observation seven and the other nine months, the notable improvement was unquestionably due, in part at least, to electricity. Four of the remaining seven cases appeared in the present paper, and the others had been recorded in the *Medical Record*, April 6, 1878.

The conclusions which Dr. Rockwell had reached, after making observations for thirteen years, were:

First.—Electricity possesses a certain value in the treatment of epilepsy. It is not known, nor is it claimed, that used alone it can ever cure epilepsy. When, however, it is used in connection with the bromides its value is unmistakable, and a certain number of patients recover who otherwise would remain uncured.

Second.—The good effects of electricity are seen especially in cases in which the attacks occur in the night, although day attacks have been successfully controlled.

Third.—Central galvanization and general faradization have been the most efficacious methods employed.

Fourth.—When electricity fails to either cure or aid the cure, it is often efficacious,

by the method of general galvanization, in affording grateful relief from undefinable nervous symptoms recognized under the term neurasthenia.

Fifth.—The tolerance of bromides can be increased and bromic acne diminished by the systematic use of electricity.

Sixth.—Electrical treatment must be administered with care and judgment. All interruptions of the current should be avoided in central galvanization, as the shock is liable to hasten rather than prevent an attack.

THE TREATMENT OF SYPHILIS BY MERCURY.

At a meeting of the Medical Society of London, held February 21, MR. E. MILNER read a paper on the different modes of administering mercury in syphilis, and the indications for their application. He gave some of the results of his experience of twelve years' out-patient practice at the Lock Hospital, with a view of arriving at some definite conclusion as to what preparation of mercury should be employed in order as rapidly as possible to get rid of the visible signs of syphilis. In the majority of cases blue pill is as good as blue ointment and green iodide as Donovan's solution; but even in these cases he thought that more accurate and more careful observation in practice would render such an admission unjustifiable. He dealt with three of the most common methods of administration: 1. Some of the cases in which green iodide should be used. 2. Some of the cases in which inunction should be practised. 3. Some of the cases in which the vapor of calomel should be employed. Of all the syphilitic rashes, the most evident, most persistent, and perhaps the most difficult to combat, is the vesicular syphilide. It most frequently occurred in light-haired women, who drank large quantities of wine, as distinguished from spirits. The vesicular may be associated with an early tubercular syphilide, and this usually in dark-haired people during cold weather, and in the underfed and underclothed patients of anxious temperament. In the first of these two classes green iodide with Donovan's solution, in large doses, was most valuable; in the second class the inunction of the German preparation of blue ointment has excelled all other methods of treatment. In billiard-markers, some actors, barmaids, actresses, and commercial travellers, who drink freely and sit up late, the syphilitic rash is apt to become angry, excessively red, and marked.

In spite of the diarrhoea, give green iodide in large doses. Donovan's solution, with soda and iodide of sodium, will assist, the latter salt being better than the potassic salt. The keeping of late hours materially influences the character of syphilitic eruptions. These people often have a thick oily perspiration, which interferes with the nutrition of the skin and initiates the manifestations of syphilis; it was perhaps one of the causes of the so-called gouty character of the syphilide. Barmaids present the reddest and most angry syphilitic rashes, and the lesions are most difficult to treat. Such might be named "barmaid's syphilis." For these cases green iodide of mercury was the best preparation. In those who drink, and never take care of themselves, green iodide was next best to inunction, and would probably, under all the circumstances of the case, prove most efficacious. Green iodide of mercury is the most available remedy with patients who sit up late, who have light hair, and drink freely. The typical case for the green iodide would probably be the light-haired degenerated lady who sits up all night playing the piano at suburban parties, who eats but little, but refreshes herself frequently, and takes a little brandy before retiring to rest. The German ointment is less strong, contains more suet, and is harder and preferable to that of the British Pharmacopœia. It salivates severely less frequently, and produces a more permanent effect. Many cases of primary syphilis in healthy, abstemious, light-haired men will be benefited by mercurial inunction. Patients with fair hair treated in this country with inunction, though they may almost avoid syphilides, may suffer severely from a form of sloughing sore throat. Inunction in the late stages is a refuge for the destitute, but rarely it may give gratifying results. Large syphilitic testicles, secondary gummata, and syphilitic nervous disease may yield like magic to inunction. Inunction is most useful in the early stages with healthy, light-haired, abstemious patients with a primary sore, and the German ointment will almost certainly cure the distracted married man who has had syphilitic lumps for many years. To rapidly get rid of sores the local administration of mercury in the form of the vapor of calomel is of material assistance, whether the sore be the smooth, flat, indolent button, or accompanied by destructive ulceration of the glans penis. The vapor is also valuable in ulceration of the extremities, especially the legs, syphilitic in their origin, but frequently associated with a weak state of con-

stitution, or, more frequently still, associated with a too rapid or indiscriminate administration of mercury. In certain cases, where mercury cannot be administered internally, the vapor of calomel locally applied is of great assistance, as also in the red, angry, tubercular eruption on the forehead along the line of the hat-leather, and in the destructive ulceration of the fauces in late secondary syphilis.—*The Lancet*, March 5, 1887.

THE NUTRITIOUS VALUE OF PEPTONE ENEMATA.

EWALD, of Berlin, contributes an article to the *Therapeutische Monatshefte* for March, 1887, on this subject, which is as follows:

In spite of manifold investigations regarding the value of peptone injections, the use of these agents for nourishing the sick through the mucous membrane is not an accepted usage, probably because the experiments upon this point were made upon animals or upon healthy men, and investigations upon diseased men have been so recently made. It cannot be denied, however, it is indeed highly probable, that invalids, especially those with affections of the digestive organs and impaired assimilative powers, stand in entirely different relationship regarding susceptibility to these agents than do healthy organisms.

The present investigation was made under all possible cautions upon three patients aged respectively 57, 34, and 32 years. The first patient had paralysis of the left arm after apoplexy some time before, but was otherwise healthy, the body weight at the commencement of the treatment being one hundred and five pounds. The second patient was partially demented, and while having no direct lesion of any organ which could be discovered, yet was anæmic and poorly nourished, the body weight being also one hundred and five pounds. The third patient had a severe neurosis of the digestive tract. She took the smallest amount of nourishment possible, which was generally rejected by emesis. She had been for some time treated by nutrient enemata, and was bedridden, her weight being ninety-five pounds. The estimation of the solids in the urine was performed in accordance with the methods of Pflüger and Boland; the solid matter of the fæces was estimated by the method of Kjeldahl. The materials used were Kemmerich's flesh peptone, Merck's caseine peptone, an emulsion of raw eggs, and eggs prepared by emulsifying eggs with fifteen per cent. HCl

(pure) and pepsin (two to four scruples) for twenty-hours, making weakly peptonized eggs. The treatment was administered in periods of one, three, or five days, and was regularly continued for three months. Preparations of egg were included for the reason that the preparations of peptones commonly purchased contain but a minimum of genuine peptone, while the experimenter, by making his own mixture, could be assured of the material. The results were as follows: Single doses of purchased peptones, in quantities of six and one-half, ten, and twelve and one-half drachms, had but a transient and unreliable effect upon tissue-changes. Once only was observed a decided increase in the nitrogenous matters in the urine; in other experiments the increase was very slight, in some cases it was entirely wanting. An increase in the amount of urine followed all the enemata which were given, an increase too great to be accounted for by the solution of the peptones taken and the amount of water injected, so that the substances ingested had an evident influence in producing diuresis, which was probably dependent upon the various salts which the peptones contained.

The great variations in the effect produced by single injections teach us that a series of observations is needed to arrive at reliable results. In the case of the third patient, the series of injections was continued three months, in periods of three and five days. Ten, twelve and one-half, and eighteen and three-fourths drachms of the purchased material was used, and the nitrogenous matter corresponding to four or six eggs. The result in the production of nitrogenous excreta was greatest after the ingestion of Merck's casein peptone; the same in amount after the use of Kemmerick's peptones and prepared eggs, and sank to its lowest limit when neither peptones nor eggs were given. For example, the excretion of nitrogenous matter, after the daily ingestion of two and one-half drachms of nitrogenous food by the mouth and by casein peptone enemata, was two and one-third drachms; after using two and five-sixths drachms of nitrogenous food by egg enemata, one and five-sixths drachms of nitrogenous excreta; after two and two-thirds drachms of nitrogenous food in flesh peptone enemata, one and one-half drachms of excreta (nitrogenous); while the ingestion of one and one-third drachms nitrogenous matter of ordinary diet, of which one pint of milk, without preparation or addition, was given as an enema, returned one or one and one-fourth drachms

of nitrogenous matter in the excretions found in the urine,—that is, a comparatively close correspondence between the quantity of nitrogenous matter ingested and excreted was observed when ordinary diet only was taken. Especially evident was the lessening in the excreta which succeeded each marked increase.

Much more noteworthy, however, than the metabolism of peptone was the gain in nitrogenous matter which the organism acquires, which is assimilated by the tissues, and therefore is lost from further estimate. In these results the gain in nitrogenous matter was least after the use of Merck's casein peptones; the gain was greatest after the use of peptonized eggs; between these extremes was flesh peptones and raw eggs, not prepared, while the omission of peptones, especially eggs, was followed by a loss, which succeeded most markedly immediately after the greatest gains. As illustrating these observations the following were noted: After the ingestion of two and one-half drachms of nitrogenous matter in casein peptone the gain in nitrogenous matter retained was but six grains in five days; after the ingestion of two and five-sixths drachms of prepared eggs, four and one-third drachms of nitrogenous matter was gained; when two and two-thirds drachms of Kemmerick's peptones were given, two and five-sixths drachms of nitrogenous matter was gained; when two and one-third drachms of raw eggs were administered, more than three drachms of nitrogenous matter was gained; with the giving of four scruples of nitrogenous matter there was a loss to the extent of two and one-third drachms in five days. These amounts, like those preceding, are not strictly accurate in showing an equal return of matter ingested, but they vary within certain limits, which evidently depend immediately upon the favorable or unfavorable peculiarities of the individual; so that, for example, on a second trial with casein peptone much better results were obtained; in five days an increase of two and two-thirds drachms followed the ingestion of two and one-half drachms of nitrogenous food. The casein peptone never equalled in food value the eggs and flesh, although until it is possible to complete chemical changes in the body more accurately too great stress should not be laid upon the apparently unequal amounts of nitrogenous gain retained.

The following facts were demonstrated from these experiments, with no room for doubt:

First.—The power of the rectum to absorb is undoubted: the amounts, however, which are absorbed vary greatly from influences not to be controlled and peculiar to the individual, so that a purely physical or chemical action, independent of nervous influence, which can be produced by the necessary means at will, does not exist.

Secondly.—The appropriateness of an albuminoid for rectal absorption is not dependent upon its richness in genuine peptone. Eggs which contain the smallest quantity of peptone are as readily absorbed, and even give a greater gain to the organism than peptones which have a double or quintuple amount of contained peptone.

Thirdly.—We are able to produce with unprepared eggs, and still better after preparation with hydrochloric acid and pepsin, the same results which are obtained with purchased peptones, and at about one-half the cost.

THE EFFECT OF HYDROCHINONE ON URINE AND UREA.

DR. ANTAËFF, working in Professor Sushchinski's pharmacological laboratory, has recently investigated the effect of the presence of hydrochinone on the alkaline fermentation of urine and on urea itself. Hydrochinone is represented by the formula $C_6H_4(OH)_2$, being, in fact, benzole in which two atoms of H are replaced by hydroxyl; it is isomeric with paracatechin and with resorcin. Mering found it in the urine after arbutin had been given, and Baumann and Presse in that of persons who were taking carbohc acid. Dr. Antaëff found that when two per cent. of hydrochinone was added to fresh urine the latter remained entirely free from alkaline fermentation. After twenty-five days no cloudiness or precipitate had formed; there was no ammoniacal odor, the smell being just like that of fresh urine; the reaction, too, was acid. When only one per cent. of hydrochinone was added, some deposit formed after a time, but there was no ammoniacal odor, and the reaction only became neutral. Observations were then made on solutions of urea. To one hundred cubic centimetres of distilled water were added one gramme of urea and one gramme of hydrochinone. After twenty-four hours seventeen per cent. of the urea had been decomposed. When the hydrochinone was omitted, only one per cent. of urea was decomposed in the same time. Again, when larger quantities of urea were present, hydrochinone, in the same

quantity as before, exerted a still greater effect in increasing the decomposition; thus a three per cent. solution of urea lost 0.2 per cent. of its urea, but when hydrochinone was present it lost 13.5 per cent. The solutions of urea with hydrochinone turned a light cinnamon color, which became darker on standing. The destruction of urea by hydrochinone was believed by Dr. Antaëff to be due, not to a fermentation process, but to a chemical action of hydrochinone upon urea. Dr. Dianin suggests that the action may be analogous with that of acids on urea, which cause it to break up into ammonia and carbonic acid, with this difference, however, that hydrochinone probably forms a compound with the ammonia as it is disengaged, which is not easily decomposed by hypobromite of sodium. This theory will also account for a certain deficiency in nitrogen which was always observed in azometric determinations of urea in solution with hydrochinone.—*Lancet*, April 16, 1887.

THE ACTION OF SPARTEINE.

VOIGT and LEO have through recent papers added to our information as to this alkaloid. According to the analysis of their papers published in the *Med. Chron.* for April, 1887, Voigt found that sparteine in doses of $\frac{1}{8}$ to $\frac{3}{8}$ grain, in a series of cardiac and other diseases, stimulated the heart, increased the contractions, and raised the blood-pressure. It acts quickly, and its action lasts often over twenty-four hours, during which time the effect can be increased by a repeated dose. A pause of a few days after continuous administration is useful, as the drug acts the more forcibly afterwards. He finds it to be a diuretic, but not one of first rank. Toxic symptoms, very seldom observed with doses of 1 to 4 mg. ($\frac{1}{8}$ to $\frac{3}{8}$ grain), were faintness, headache, palpitation, and uneasiness, which soon disappeared, even when the use of the drug was continued. Voigt would recommend sparteine for therapeutic use,—1, in valvular disease with failing compensation; 2, in valvular disease without faulty compensation, as a tonic and sedative; 3, in weak action of the heart without valvular disease; 4, in pericarditis; 5, as an adjuvant to digitalis.

Leo exhibited sparteine in doses of 0.1 gm. ($\frac{1}{10}$ grains) every two hours in twenty-four cases. In only nine of these was there any objective result definitely traceable. In the remaining fifteen cases, eight showed subjective improvement, and in seven no result

whatever was perceptible. In the first nine cases there was very marked diuresis. The drug did not influence the blood-pressure materially, and on this point the author differs from Germain Sée, who placed digitalis and sparteine side by side. He ascribes the diuretic action of the drug to stimulation by it of the renal epithelium. He found the drug to have a marked action upon the heart in relieving palpitation, pain, and dyspnoea. In the majority of cases, where relief was afforded, there was no evidence of any controlling of the heart's action. He finds sparteine most active when given shortly after a course of digitalis. No symptoms of poisoning were observed. The author thinks that sparteine is indicated when diuresis is required, and will be principally useful in cases of cardiac disease with failing compensation. It is noteworthy that, though Leo has administered the drug in doses a hundred times greater than those given by Voigt, yet he seems to have been less successful in his results.

RECENT TESTS FOR SUGAR.

In addition to the ordinary clinical tests for sugar, such as copper sulphate and potash, potash alone, indigo-carmin and others, two new reactions have been described which are stated to be more delicate than those now in use. The first of these, in point of time, was introduced by Fischer, and had been utilized by Von Jaksch in clinical investigations. It consists in placing a small portion of hydrochlorate of phenyl hydrazine with twice the quantity of sodium acetate in a test-tube, which is then half filled with water and warmed. After adding an equal volume of the solution to be tested, the mixture is boiled for twenty minutes, when, on cooling, yellow crystalline needles of a compound of glucose and phenyl hydrazine (phenyl glucosazine) are deposited. These crystals have a definite melting-point of 204° to 205° C. If the quantity of sugar is small, the microscope may be required to detect the characteristic crystals. By this test, which is a very delicate one, Von Jaksch has investigated the occurrence of sugar in many morbid conditions. In normal urine a positive result was never obtained, though the small number of cases examined did not justify a refutation of the statement that small quantities of sugar are present in normal urine. The test is a very convenient one to apply to the small quantities of sugar which are sometimes present in the urine in cases of brain-tumor and liver-disease; but the most

interesting results were obtained in certain cases of poisoning. Thus, in carbonic oxide poisoning, though the fact of the presence of sugar in the urine has often been stated, no accurate chemical investigation has been made of the matter. The question is, however, settled by the very positive results obtained by means of the phenyl hydrazine test. Sugar was found in all the three cases of poisoning which came under investigation. It was also found in two cases of asphyxia, and in one of deep chloroform-narcosis, and in the urine of a patient taking large doses of salicylate. The last observation is an interesting one, as, though it is well known that the urine of patients taking salicylate reduces Fehling's solution, it is not certain whether this reduction is due to glucose or to a salicylate excretory compound. The phenyl hydrazine test will no doubt be found useful in deciding whether sugar is present or not, when the ordinary clinical tests give a doubtful reaction.

The second test for sugar has been introduced by Molisch, and does not appear to be so accurate as the one just mentioned. It consists in adding two drops of a fifteen to twenty per cent. solution of naphthol in alcohol to the liquid to be tested, and then an excess of strong sulphuric acid, which causes a deep violet coloration; if water be now added, a deep violet precipitate is formed. If thymol be used instead of naphthol, a carmine-red precipitate is produced. The test was introduced by Molisch, and Seegen has stated that it is given by all proteid bodies. The reactions are, however, different, since the proteid precipitate is soluble in strong hydrochloric acid, while the sugar one is not. The reaction would thus have disadvantages in a clinical application if albumen were present. Molisch states that by its means he has been enabled to confirm Brücke in finding small quantities of sugar in normal urine.—*Brit. Med. Jour.*, February 26, 1887.

A METHOD OF APPLYING PLASTER OF PARIS IN CASES OF FRACTURE OF THE LEG.

DR. C. R. ILLINGWORTH describes, in the *Provincial Med. Jour.* for April 1, 1887, a method of applying plaster of Paris in cases of simple fracture of the leg, which he has found easy and efficacious. The fracture having been carefully set and well-padded Cline splints applied, he waits for a few days to see that no inflammatory action exists at the seat

of the injury. If it supervene, a lotion of acetate of lead and tincture of belladonna will answer well. As soon as all inflammation has subsided (during the treatment of which the use of the outer portion of the splint will generally suffice) he applies the plaster to the inner side of the leg first, on a piece of lint shaped to the leg and foot, to prevent contact with it. A paper pattern of the inner side of the leg and foot from below the knee to the sole is then cut, which shall represent about a quarter- or half-inch less than half the circumference. Three, or at the most four, pieces of lint are then cut to the pattern, and roughly stitched together. The larger (protective) piece of lint having been laid on the leg and foot while held by an assistant or two, on the outer Cline, the lint is saturated with plaster of Paris mixed with an equal weight of water, and bound to the outer Cline with a broad fine calico bandage. For this purpose one pound of plaster (to one pint of water) is enough. The limb is then laid on the outer side as before, and steadied with sand-bags for a day or two days. The broad bandage is then unwound or cut off with scissors, and the outer Cline removed, while the leg is supported on the inner plaster-splint, and the process repeated on the outer side of the leg. By this method all unnecessary movement of the fractured limb is avoided. When the second or outer portion has been laid on, Dr. Illingworth finishes bandaging with muslin bandages impregnated with plaster of Paris and moistened with water before being applied.

NEW TREATMENT FOR PHTHISIS.

A new method of treating phthisis has been proposed, but apparently as yet but slightly tried, by PROFESSOR KREMIANSKI, who read a paper on the subject at the recent Moscow Medical Congress, which provoked a good deal of discussion. The idea is based, firstly, on the fatal effect of the most dilute solution of aniline on Koch's bacillus; and, secondly, on the fact that aniline seems to be but slightly, if at all, poisonous to the human body. Professor Kremianski proposes to introduce aniline into the lungs, and, indeed, the circulation generally, by inhalation, so that the phthisis bacilli should be bathed in a very dilute solution of aniline, wherever they may be. This, he thinks, would kill them, and render even pulmonary cavities free from bacilli, so bringing them into the condition of healthy granulating ulcers, which may be ex-

pected to cicatrize. A committee has been appointed, including Professors Subbotin and Ostroumoff, who expressed themselves at the meeting as strongly opposed to the plan, for the purpose of observing Professor Kremianski's proposed experiments in one of the Moscow hospitals. Two cases in which the aniline treatment had been successfully tried were detailed. A lad of 18, who had undoubted phthisis, was ordered a 4-drop dose of aniline (but took by mistake three times the proper quantity) combined with nux vomica, mint-water, and antifebrin, his diet being good, including dried meat, kvas, and oranges. He was also given inhalations of atomized aniline. A remarkable change took place almost immediately, all the râles disappearing; his temperature, respiration, and pulse becoming normal. His skin, however, assumed a slightly blue tinge, but whether this was as permanent as the cure is represented to have been is not stated. The second case was a complicated one, there being tubercular peritonitis and meningitis, together with typhoid fever, present at the same time as pulmonary phthisis. Aniline inhalations, washing out the pulmonary cavities with corrosive sublimate and antifebrin, were employed, together with a special acid diet, as in the other case. Here, too, the results are said to have been remarkably good, the bacilli disappearing from the sputum, and the patient regaining his health entirely. No mention is made in the abstract published by the *Vratch* of any change of color in this patient's skin. Among the various replies that were made to Professor Kremianski, Dr. Zakrzhevski, of Helsingfors, remarked that, admitting the facts as stated, still there was nothing to show that the aniline had been the cause of the cures. He himself had had surprisingly good results in phthisical cases, the disease becoming completely arrested by simply giving increased nourishment and prescribing antipyrin.—*The Lancet*, March 5, 1887.

ABSORPTION THROUGH THE SKIN.

RITTER and PFEIFFER (*Berliner Klin. Woch.*) have repeated the experiments which have been made on this much-disputed topic, and their results serve to strengthen the doubts which others have before expressed as to the capability of the skin to absorb the substances which have been long used, probably following up a false analogy with the effects of mercurial inunctions, with the intention of producing their constitutional effects by their transmission through the skin into the gen-

eral blood-current. The method which they employed consisted in rubbing well into the extensor surface of a perfectly healthy arm or leg about half an ounce of a salve containing the substance under investigation, and then keeping the skin firmly covered for twenty-hours with a protective bandage, so as to prevent any possible absorption by the lungs. The urine was collected for twenty-four hours and examined, both with and without previous concentration, for the presence of the drug. By these means it was found that a ten per cent. iodide of potassium salve transmitted the salt through the skin only once in five different cases, and then only after being used for four days,—that is, in other words, only after the skin had been irritated and its continuity destroyed by the prolonged action of the fatty acids derived from the decomposition of the lard.

Salicylate of sodium applied in the same way never showed the slightest trace of its presence in the urine.

Salicylic acid, on the contrary, invariably gave its characteristic color test with ferric chloride within a few hours after its application. This is easily explained by its well-known action in softening the epidermis and rendering it permeable. If iodide of potassium be applied to a spot previously treated with salicylic acid, it quickly passes into the organism and becomes detectable in the urine.

In a series of parallel experiments made with the view of testing the reputed power of Liebreich's lanolin in assisting bodies incorporated with it to penetrate the skin, the authors were unable (in common with the majority of other experimenters) to perceive that it possessed such power in the slightest degree. [Its physical properties are, however, undoubtedly useful as a salve base.]

Ritter repeated also the experiments which he had previously carried out in order to test the capability of the skin to absorb substances which were sprayed on to it in watery solution. Röhrig, and later Juhl, had asserted this apparently paradoxical action really occurred. Ritter, however, after carefully excluding all possibility of entrance of the fluids into the system through the mouth or respiratory passages, was utterly unable to find in the urine the slightest trace of the salicylate of sodium or iodide of potassium with which he experimented. He therefore confirms the result of former experiments of his, that the normal skin is not permeable to substances in spray solutions.—*American Journal of Pharmacy*, April, 1887.

THE THERAPEUTIC USE OF IODOL.

PICK gives the results of his use of this agent in the clinical wards of the hospital at Prague. He finds that it resembles iodoform, but possesses the great advantages of freedom from odor, unpleasant after or attendant effects, and its adaptability to internal use. It is a yellowish-brown powder, soluble in absolute alcohol, one to three; in ether, one to one; in water, one to five thousand. The writer employed it as powder; gauze; iodol ether (ten to twenty per cent.), which was especially useful in spray; iodol-ether colloid, one to five or ten of iodol; iodol ointment, with lanolin, five and ten per cent.; and iodol paste, made by adding a few drops of alcohol or glycerin to iodol.

Regarding its elimination and constitutional effects, iodine was found in the urine and saliva in a case in which iodol had been packed into the cavities of buboes; symptoms of iodism were also present in this case; other examinations failed to reveal its presence in the secretions after use.

In its effects when used by internal administration it differed markedly from potassium iodide in that it was slowly absorbed, and only after four and one-half or six days was entirely absent from the secretions; potassium iodide, on the contrary, is quickly absorbed and excreted in one and one-half or two and one-half days.

The writer used iodol in the following diseased conditions:

1. Simple catarrh and blennorrhagic catarrh of the vagina and cervix, with erosions and inflammation of Bartholini's glands; cleansing with sublimate solution, spray of iodol ether, tamponing with iodol gauze. Result, good. Iodol could not, however, be used in the urethra.

2. Simple and also sclerotic ulcerative processes. Iodol does not check ulceration in its virulent form, it does not hinder a process of sclerosis nor effect absorption, but it markedly hastens healing. It was used in spray, powder, or gauze.

3. Condylomatous processes were hastened in their healing by iodol spray; the absorption of the infiltrate was aided by mercurial plaster.

4. Suppurative adenitis; incision and cutting the abscesses; disinfection with sublimate solution; filling the cavities with iodol and iodol gauze. The first bandage applied remained five days without renewal; the second, eight days. The time generally consumed in healing was sixteen days; in indo-

lent buboes, iodo ether, collodion, poultices, and injections of unguentum cinereum, in quantities as great as 30 grains, in the thighs and hypogastrium.

5. Gummata and gummous ulcers: the former were treated by iodo ether collodion, iodo-lanolin ointment, and poultices; the latter by iodo in powder. Iodo was well borne when given internally in doses as great as 30 or 45 grains daily, which rarely produced diarrhoea, and in only the mildest degree intoxication.

In view of its peculiar absorption and elimination the writer gave for two days in succession, morning and evening, $\frac{1}{4}$ to $\frac{1}{2}$ grain in capsules, and repeated these doses first on the same day of the following week, his purpose being to allow one or two days to be free from ingestion of iodine. Iodo is preferable to potassium iodide in that the action of its iodine radical is more prolonged, not intensive. When a rapid and energetic action of iodine is desired, potassium iodide should be given.

6. When used for various non-venereal processes, as chronic ulcers of the feet, scrofulous gland abscesses, lupus after scarification and curetting, iodo acts as iodoform, but forms no crust.—*Therapeutische Monatshefte*, No. 1.

CLOTTAGE OF THE URETERS.

At a meeting of the Medical Society of London, held March 14, 1887, MR. HURRY FENWICK submitted for criticism an operation which he had termed clottage of the ureters. The procedure consisted in an attempt on the part of the surgeon to block or to cork up a ureter with clot. He argued from statistics that it ought to be performed in those cases where the surgeon has to combat profuse and ungovernable hæmaturia from a kidney hopelessly crushed by an accident or affected with advanced carcinoma; that it was a conservative operation; and that it ought to rank immediately before the operation of nephrectomy. The procedure consisted in introducing into the bladder the author's ureter-aspirator (GAZETTE, Nov. 15, 1886, p. 841, Suction of the Male Ureters). The ureter of the damaged kidney is then sucked into the eye of the instrument, and the blood-clots in the ureter. Light pressure is now made with the beak of the instrument against the opposing finger in the rectum, and the ureter is thereby tightly nipped, thus giving time for the clot to collect a little in the pelvis of the kidney. A case in which the operation was

successfully performed was related, of a man aged 51, with right renal carcinoma, whose hæmaturia, of thirteen months' duration, had been profuse and intermittent, but after the operation was clear to the day of death, six months later. No necropsy could be obtained.

MR. JACKMAN showed his instrument for nipping the orifice of the ureter, and explained its use.

MR. MORRIS quoted cases which showed that plugging of the ureter with clot was followed by enormous distention of the kidney by blood.

MR. R. W. PARKER and MR. BRUCE CLARK advocated direct surgical treatment of the kidney, provided hæmostatics failed.

MR. BERNARD PITTS said the danger was usually from peri-renal or intra-peritoneal extravasation of blood, rather than from its escape into the bladder. He asked if this instrument could be used to remove a clot from the ureter.

MR. FENWICK, in reply, said that clots were usually adherent to the ureter, and could not be removed by suction.—*The British Medical Journal*, March 19, 1887.

THE NEW "SPECIFIC" FOR DIABETES.

According to the Paris correspondent of the London *Lancet* (March 26, 1887), DR. MARTINEAU gives full details in the last number of the *Annales Medico-Chirurgicales* of the treatment advised by him in diabetes. It was in consultation with the late Professor Rouget that he learned the formula which he now publishes with so much confidence. The patient in question had been the subject of diabetes for some years, and was suffering at the time from cerebral hemorrhage. Dr. Rouget proposed that they should not modify his diet in any way beyond restricting in a slight degree the use of farinaceous food, fruits, and sugar, and that he should drink during meals and in the intervals of thirst arsenicated lithia water, prepared as follows: In the upper part of a Briet apparatus of one litre for making aerated water were to be introduced twenty centigrammes of carbonate of lithium, and a tablespoonful of the following solution: arseniate of sodium, twenty centigrammes; distilled water, five hundred grammes. This water to be drunk at meals mixed with wine, and the contents of the recipient to last for three meals. Before commencing the treatment the urine was found to contain sixty grammes per litre of sugar, being two hundred and twelve grammes for

the quantity voided in the twenty-four hours. Three weeks later, on October 12, two litres, instead of three and one-half, represented the daily secretion of urine, and the quantity of sugar twenty grammes per litre. On October 29 there were one and one-half litres of urine, and the amount of sugar eleven grammes per litre. On November 14 the proportions had fallen to one litre of urine containing four grammes of sugar. On December 1 no sugar could be detected, and the daily average of the urine was one litre. The patient died four years later of uræmia caused by renal disease, and up to the time of his death no sugar had ever been found in the urine. Dr. Martineau gives two other cases in illustration, in which the treatment has kept the glycosuria in abeyance for six and five years respectively. In a third instance no sugar has been seen for six months. In all the patients with whom the treatment was successful there were, says Dr. Martineau, arthritic symptoms, either in the form of biliary or renal lithiasis, of articular manifestations, or of cutaneous eruptions. In the only three cases of failure there was no arthritism, but herpetic symptoms existed in the form of "nervovism" and skin-eruptions. The disappearance of sugar from the urine is attributed by Dr. Martineau to the action of the lithia upon the glycogenic matter, which it helps to transform into glucose, and thence into carbonic acid and water. It is the presence of lithia that also explains the action of those natural mineral waters which are useful in diabetes. Taking for granted that the results are as stated by Dr. Martineau, it is somewhat remarkable that he should fall into therapeutic superstition, when there is a much more adequate physiological explanation. In all his successful cases the quantity of drink was restricted to a quart during three meals, whereas in the unsuccessful case, which is given for the sake of comparison, the patient drank three litres and voided an equal quantity of urine in the twenty-four hours. The late Dr. Hyde Salter found abstinence from liquids at meal-times the most useful of all treatment for asthma, and obstructed respiration is given by Pavy as a cause of diabetes, Brunton allowing that it is produced by deficient oxidation, which comes to the same thing. There is a group of allied affections characterized by the retention of the products of imperfect oxidation, and by functional disturbances of different kinds resulting therefrom, the cause and effect having a reciprocal action. Gout and nervous depression, obesity and imperfect respiration,

are familiar examples. In these cases, as in rheumatism and other morbid conditions of the same kind, everything that promotes oxidation and excretion is of capital importance. Abstinence from alcohol and the use of the Turkish bath are valuable means to this end, but total abstinence from alcohol, with a strict limitation of fluids, is the most potent of all. Unfortunately, it is extremely difficult, most especially in diabetes, to carry out such restrictions. If, however, lithia as administered by Dr. Martineau does enable diabetics to abstain from liquids, he may be congratulated upon having made a valuable contribution to practical medicine.

THE USE OF ACONITINE IN THE TREATMENT OF NERVOUS DISEASES.

At a meeting of the Medical Society of the County of New York, held January 24, 1887 (*New York Medical Journal*, April 16, 1887), DR. E. WAITZFELDER described the physiological action of the amorphous and crystalline forms of aconitine. The drug, he said, seemed to have a double action on the nerve-centres,—first, that of irritation; second, that of subsequent paralysis. In the treatment of diseases of the nervous system, it was in neuralgias especially that it was of service, and, after citing evidence in this direction from different authorities, he said his own experience with the drug in this class of nervous affections had been equally satisfactory. He had succeeded in curing some patients and relieving others, who had suffered from facial neuralgia for a varying length of time. He had found a combination of aconitine and veratrine, used externally, to act better than aconitine alone. Caution should be observed in applying it near the eye, and over cuts and bruises, as a poisonous amount might enter the system. He had employed aconitine in three cases of chronic sciatica; in two with decided benefit; in the third with no apparent benefit after a month. In the treatment of pachymeningitis, whether syphilitic or not, he had occasionally observed benefit. A marked example was related, in which a woman was relieved of pain within three days, after anti-syphilitic treatment alone, long continued, had been ineffectual. There was a history of syphilis. The use of aconitine was almost always followed by some relief in such cases, but not always so soon. He had used it for agonizing headache from tumor in two cases, but without giving relief. *In two cases of exophthalmic goitre no effect upon the tumor or the

eyes was observable, but the patients said they felt better after the use of the drug. It was of benefit in active congestion of the brain with increased blood-pressure from excessive action of the heart. Here it was combined with bromide of potassium. In insomnia from business troubles it was of benefit in connection with small doses of bromide of potassium. In selected cases, carefully watched, it was useful for hyperæsthesia from spinal irritation, and in cases in which there were doubts as to commencing myelitis.

EFFECT OF MASSAGE ON EXHALATION FROM THE LUNGS AND SKIN.

DR. STABROVSKI has published a series of laborious researches made with a view to determine the effect of massage upon the pulmonary and cutaneous exhalation. They were carried out in Professor Manasseïn's wards in St. Petersburg on fourteen persons, nine of whom were in good health, and the remaining five convalescent from various acute diseases. In each case the duration of the observations was ten days, during the first five of which massage was practised. Deep kneading was practised for the first two days, after which the body was washed over with a wet sponge to remove the fatty matter adherent to the surface of the skin. During the next two days deep rubbing was practised, and then the wet sponge used again. On the fifth day deep rubbing with the dry hand was practised. The massage took place at 10 A.M., except in two cases, where, it was performed at 7 P.M., with the object of observing its effect on nocturnal perspiration. The sittings were of an hour's duration. The results in the different cases were discordant. In five cases there was an increase in the pulmono-cutaneous exhalation and a diminution in the amount of urine, the increase occurring shortly after the massage, so that when this was practised in the morning the perspiration was increased during the day, but became normal during the night. Similarly the quantity of urine fell during the day and rose again at night. In three cases the massage increased the quantity of urine and diminished the pulmono-cutaneous exhalation. In the remaining six cases both the urine and the pulmono-cutaneous exhalation were increased during the period of massage. The general effect on the pulse was to lower it some ten or fifteen beats. No alteration appeared to be produced in the rate of respiration.—*Lancet*, March 26, 1887.

THE PROTECTION OF THE PERINEUM WHILE THE FŒTAL HEAD IS PASSING.

DR. D. BERRY HART describes in the *Edinburgh Medical Journal* for April, 1887, the plan which he teaches for supporting the perineum, and which he believes to fulfil its purpose. It comprises the consideration of the three different points :

1. *The relations of the uterus and its contents when the normally rotated fetal head is beginning to distend the perineum.*

At this period of the labor, the lower uterine segment, cervical canal, and pelvic floor have been canalized by the retracting uterus elongating and pushing the foetal contents downwards. The whole foetus is compressed and packed together, with the chin flexed on the sternum, and the occiput leading. The perineum or sacral segment is being driven back, its lower end elongated and thinned, and the vulvar cleft, chiefly in its lower part,—i.e., below the level of the vestibule,—greatly distended. Uterine retraction sets up in the foetus and retained liquor amnii a general-contents-pressure, which is distributed over that part of the skull periphery lying below the girdle of resistance. The diameters of the girdle of resistance will vary greatly, according to whether the occiput or sinciput dips. In the latter case the antero-posterior diameters will be increased, and the risk of tear augmented in like proportion. The demonstration of this belongs to elementary obstetrics.

In taking (2) *the consideration of how the fetal head should pass the perineum so as to have a minimum of tear*, Dr. Hart first points out that the term extension of the head, as the fourth consecutive movement of the labor mechanism, is a most misleading one. It implies what he denies,—that the chin leaves the sternum while passing the perineum ; and that during the anterior fixation of the occiput under the pubic arch, antero-posterior and increasing diameters of the foetal head form the antero-posterior diameters of the girdle of resistance. Dr. Hart denies *in toto* that the chin leaves the sternum, and he holds that this fixation of the occiput and descent of the sinciput is not the best or normal mechanism. The best mechanism to avoid tear is for the occiput to lead, for the head to be driven on by a steady movement of translation, any rotation on a biparietal axis so taking place as to favor occipital dipping and never dipping of the sinciput. It is easy to see how the erroneous idea of extension arose. The at-

tendant, while the patient lay on her left side, watched the passage of the foetal head from behind, saw more of the anterior portions of the head appear, and accounted for it by extension.

The author then passes to (3) *a description of how the medical attendant can best guard the perineum, so as to avoid undue tear.*

All the attendant can do, apart from the familiar means of relaxing perineal spasm by chloroform and hot applications, is to prevent the sinciput being forced down in advance of or faster than the occiput. He restrains the foetal head from passing too rapidly. He thus has always to get the occiput to lead, and to get it fully born first if possible. The best way of doing this is as follows:

With the patient lying, of course, on her left side, the attendant places the thumb of his right hand, guarded by a napkin soaked in hot sublimate, in front of the anus, and presses it gently there. The pressure is not in the direction of a line joining his thumb and the pubic arch, but nearly in that of the axis of the pelvic outlet. By this, descent of the sinciput is hindered, and that of the occiput favored. When the latter is beginning to pass under the pubic arch, the fingers of the same hand are placed between it and the apex of the arch, so that when the occiput has cleared the arch the fingers are passed towards the nape of the neck, and the head thus grasped in the hand, the thumb lying over the sagittal suture. This gives one complete command over the head which is now engaging in the diameters between the nape of the neck and forehead and face, and allows the whole passage with as little tear as possible.

QUILLAIA SAPONARIA AS AN EXPECTORANT.

In the *Centralbl. für Klin. Med.*, No. 30, 1885, Dr. Kobert published a paper, already referred to in the GAZETTE, on the root of a South American tree, *Quillaia saponaria*, to recommend it as a valuable substitute for the root of *Polygala senega*. The active principle in both of the plants is a glucoside body, saponine. According to Kobert,—1. Quillaia contains five times as much of saponine as senega does. 2. Quillaia is rich in sugar, and is free from the substance to which the bad taste of senega is due. 3. Patients tolerate quillaia better than senega. 4. Quillaia but very seldom gives rise to vomiting and diarrhoea. 5. The drug possesses a decided expectorant action. Kobert's statements were

fully confirmed by the observations of Dr. Goldschmidt (*Aerztl. Intell. Blatt.*, No. 48, 1885), who had administered quillaia in thirty cases of pulmonary disease, and found that the drug may be successfully used both in cases of very profuse and very scanty expectoration. Following the example of Kobert and Goldschmidt, Dr. A. MASLOVSKY, of Professor A. Kh. Kūznetzoff's clinic, in Kharkov, undertook a series of observations on twelve patients (*Russkaja Meditzina*, No. 36, 1886, p. 595), to whom he gave a decoction of from $\frac{1}{2}$ to $1\frac{1}{3}$ drachms of quillaia in 6 ounces of water with syrup (as recommended by Kobert). Two of the patients suffered from emphysema pulmonum, one from interstitial pneumonia with bronchiectasis, four from phthisis, one from left pleuro-pneumonia, one from syphilitic stenosis of the right bronchus, and three from croupous pneumonia. The outcome of the author's experiments may be summed up thus: 1. Quillaia does not irritate the gastro-intestinal tract (no vomiting nor diarrhoea ever occurred). 2. It increases the discharge of sputa. 3. It soothes cough. 4. But, in presence of a disposition to hæmoptysis, the drug may give rise to an attack of the latter. Hence it is contraindicated in cases of the kind. 5. In some cases of phthisis it may intensify cough without alleviating expectoration. 6. On the whole, however, quillaia as an expectorant is preferable to senega.—*Medical Record*, January 15, 1887.

INDIAN HEMP IN THE TREATMENT OF CERTAIN TYPES OF HEADACHE.

In the treatment of headache of a dull continuous character attended sometimes by paroxysmal exacerbations, Dr. STEPHEN MACKENZIE has obtained considerable relief through the use of Indian hemp (*British Medical Journal*, January 15, 1887). In this form of headache constancy is its special characteristic. Patients will state that they rise with it in the morning, are troubled with it all day, and carry it to bed with them at night. If by chance they awake in the night they find their head is aching. The headache may in some cases be aggravated as the day advances, but sometimes the opposite condition obtains, and the headache is worse at the early part of the day. It may be frontal, temporal, or occipital, or, more rarely, vertical. Usually, however, it is diffused. It is not as a rule attended with local soreness or tenderness. Nausea may be present, but is not constant;

vomiting is usually absent. In some cases distinct exacerbations, sometimes of great severity, occur. As these subside they give place to the dull continuous headache that preceded their advent. As a rule, the ocular phenomena characteristic of migraine are absent, and the headaches are not usually hemi-craniel. Constipation is present in a certain number of cases, but removal of the constipation does not cure the headache. In some cases it is associated with disorders of digestion, but the same remark applies to these as to constipation.

Headaches of this type may last for weeks, months, or even years. They occur in persons of different ages, but are, perhaps, most common in the middle period of life, and in young adults. Several of the best marked cases which came under the author's notice have been in medical students. Patients so suffering are usually able to pursue their usual avocations, except, perhaps, during paroxysmal exacerbations, especially when their work is of an active rather than of a sedentary and intellectual character. Thus medical students have been able to attend to their dressing and other duties at the hospital, but when they have attempted to read they have found it impossible; the headache prevented the full engagement of their attention.

In the majority of such cases the use of Indian hemp in Dr. Mackenzie's experience will be of the greatest service. In the majority of cases it will cure the complaint. The one element of the headache which in his experience indicates the probable success of the remedy is its continuous character. The preparation which he always employs is extract. He begins by giving one-third or, more usually, half a grain night and morning, or occasionally three times a day. If at the end of the week some amelioration of the headache has been procured, he continues its use in the same doses, but if little or no improvement has taken place, he increases the dose to one grain at night and one-half a grain in the morning; if this is insufficient, the doses should be increased so as to make it one grain night and morning; and this failing, the dose should be gradually increased by half-grains, giving the maximum quantity at night, until two grains at night and one and one-half grains in the morning are reached. It will be seldom necessary, according to Dr. Mackenzie, to exceed this dose. Two points are especially important in order to procure success. The doses should be gradually increased in size, and its employment should be

steadily persevered in. The treatment must be as obstinate as the disease.

Given in these doses, usually no inconvenience is experienced by those taking cannabis indica; but a few patients have complained of a feeling of slight confusion or giddiness, not in any way so annoying as the condition for which it was administered.

The length of time over which treatment has to be continued varies in different cases; usually it extends over several weeks, but rebellious cases may require a treatment of two or three months. As the malady recedes, the dose should be reduced, and it is advisable to continue the administration of the remedy for a week or two after the headache has disappeared.

In the majority of cases the Indian hemp may be given alone, with compound glycerhiza powder, powdered valerian, or extract of gentian, as excipients. It by no means follows, however, that because our patient has a headache we are not to attempt to relieve his other sufferings. Thus, when constipation is present, as it is in a fair number of cases, some aperient may conveniently be combined with the hemp; aloes and myrrh pill, compound rhubarb pill, in small doses, may be added to the cannabis indica. Where flatulence troubles the patient, compound asafœtida pill, carboic acid, or quinine, separately or combined, may be given with the Indian hemp in a pill.

RHIGOLENE AND OIL AS A VEHICLE FOR SPRAYS.

In the *Medical News* for April 16, 1887, DR. AUGUSTUS STABLER calls attention to the fact that the employment of a mixture of rhigolene with one of the expressed oils is free from the irritation possessed by any mixture or combination that has water as a basis, and is more readily worked than the mixtures in which oils are employed. He employs a mixture of two drachms of olive oil or almond oil, and claims that it requires no more pressure than water to be converted into a fine spray. When sprayed into the mouth, the lips being closed upon the tube, and the patient being instructed to inspire quietly through the nose, the spray issues like a cloud from the nostrils. It is thoroughly non-irritating to the most sensitive tissues, and, in fact, appears to act slightly as a local anæsthetic. It does not catch fire when directed over an uncovered lighted gas-jet, and does not produce general anæsthesia. It would, therefore, appear to enable us by its employ-

ment to succeed, by directing the spray in the mouth, in easily applying local medication to the glottis. Dr. Stabler calls attention to the following substances, which are readily soluble in this mixture :

Copaiba balsam, cubebæ ol., camphor, eucalyptol, iodine, iodol, iodoform, menthol (crystals), naphthalene (crystals), phenol (crystals), resorcin, sassafras ol., salol, terebinthinæ ol., thymol.

Resorcin is insoluble in rhigolene, but dissolves in olive oil to the amount of nearly five per cent. The mixture will hold about three per cent. in solution. Every oil thus far tried seems to be readily miscible with the rhigolene and sweet oil, so that the entire list of essential oils and turpentine may, *a priori*, be added to the above list.

He has not found any astringent that will dissolve in olive oil or in the mixture containing it, but *iodo-tannin* may be prepared as follows :

Take a saturated tincture of iodine and dissolve in it as much tannin as it will hold. This will mix with castor oil in any proportion, and the mixture may be thinned with rhigolene to the desired consistence. It makes a very handsome, clear red solution, and though slightly irritating, is not excessively so, and the irritation very rapidly subsides.

Cocaine is insoluble in the olive oil and rhigolene mixture, but like tannin makes a perfect solution if first dissolved in alcohol and then mixed with castor oil and rhigolene.

THE INFLUENCE OF CERTAIN DRUGS ON THE CIRCULATION IN THE BRAIN AND IN THE FOREARM.

CAPELLI and BRUGIA having been so fortunate as to fall in with two cases in which, owing to injury, the skull was wanting to a considerable extent, instituted a series of experiments with a threefold object. They wished to determine (1) the variations that some therapeutic agents bring about in the volume of the brain; (2) the modifications caused in the form of the cerebral pulse by the same means; (3) and finally, to compare the sphygmographic and volumetric tracings of the brain and of the forearm under the action of the drugs.

The method of experimentation was in all respects the same as that adopted by Mosso. The observations were made in a quiet room, and the subject was always put into the same posture. A sober and uniform mode of life

was insisted upon. Before making any fresh observation a tracing of the normal pulse was obtained.

Seven therapeutic agents in all were submitted to examination, namely, nitrite of amyl, morphine, chloral, paraldehyde, hyoscyamine, the cold bath, and the warm bath. The following is a *résumé* of the experiments :

I. *Nitrite of Amyl*.—That this substance produces paralysis and conspicuous diminution of the blood-pressure has already been long known. The proportion, however, in which the different vascular regions are acted upon in this manner has not hitherto been exactly made out. The authors, therefore, have thought it of value to place in comparison the modifications caused by the drug at the same time in the circulation of the brain, in the circulation of the forearm, and in the impulse of the heart. From the tracings obtained it appears (1) that the vapor of amyl nitrite diminishes the strength of the heart's beat; (2) that the action of the drug is much more rapid and more evident in the vessels of the brain than in those of the forearm; and (3) during the inhalation marked oscillations in the volume of the forearm and of the brain take place. The undulations in the tracings due to this cause are not isochronous, and probably depend therefore on pulse changes of local origin.

II. *Morphine (Hydrochlorate)*.—This drug was given hypodermically, in doses of 1 to 2 centigrammes. Three periods were observed in its action.

1. During the first period, which lasts a few minutes after the administration of the medicament, there is a small degree of constriction, both in the arteries of the forearm and of the head. This is shown by the approach of the curves to the abscissa, diminution of the influence of respiration on them, less height of the individual pulsations, and a better marking of the elevations of elasticity.

2. The period of constriction is followed by a diminution of the vascular tone, which reaches its maximum when sleep has already begun to show itself. There is, therefore, a contemporaneous increase in the size of the forearm and of the endocranial pressure.

3. In the third period the vascular tone is gradually regained while sleep still continues, marked oscillations, however, occurring at intervals.

III. *Chloral*.—The experiments of the authors led to conclusions which differed in part from those of Curci, who holds that during chloral sleep there is diminution of

the cerebral mass through lessened afflux of blood. Drs. Capelli and Brugia consider that chloral has a paralyzing action on the vessels,—earlier and more manifest on the peripheral arteries than on those of the brain. Hence they divide the effects of the drug into two distinct periods.

1. There is, first, a period of cerebral anæmia due to the diminished arterial resistance at the periphery. This continues until the commencement of sleep.

2. Then comes a time when the cerebral vessels become paralyzed, and the volume of the brain increases. This increase lasts for a variable time, and is afterwards followed by a second period of anæmia, which coincides with waking, and is continued into the subsequent period of the waking state.

IV. *Paraldehyde*.—Paraldehyde has not always the quick and certain hypnotic action that was at first hoped for it; and the authors have tried to find whether any difference in its vascular action was traceable, according as the drug answered its purpose or not. The dose employed was always 3 grammes.

1. A few minutes after taking the medicine the force of the cardiac beat diminishes; and this diminution goes on steadily till it reaches its maximum during the most profound sleep. This effect is much less evident in those cases where the remedy fails to have an hypnotic influence.

2. In about ten minutes the pulse at the wrist begins to be modified. The apex becomes rounded, and the elevations of elasticity disappear almost altogether. The volume of the forearm at first undergoes a slight diminution, due, perhaps, to the lesser cardiac force; then it gradually increases as the vascular paralysis becomes more marked.

3. In the cerebral circulation the effect is very slight, apart from the general action on the blood-pressure. From all this it follows that if paraldehyde were a certain hypnotic, it might with advantage be employed instead of chloral to avoid the vascular paralysis produced by this latter drug. Nevertheless, it must not be forgotten that paraldehyde is not itself innocuous, especially when given in large doses. Its rapidly depressing effect on the heart is a contraindication in subjects where this organ is weak.

V. *Hyoscyamine*.—The following are the results of hyoscyamine administered subcutaneously in doses of 3 milligrammes:

1. A few minutes after the administration of the alkaloid the cardiac energy and the vascular tone increase.

2. Twenty minutes later the force of the heart's action diminishes, the tone of the vessels falling at the same time. At this time one notices a considerable increase in the frequency of the pulse and a diminution—not constant, however—in the volume of the forearm and of the brain.

3. With the higher degree of narcotism coincides the greater frequency of the pulse, the lessened cardiac energy, and the lower degree of vascular tone. The normal condition is regained in a gradual and intermittent manner, so that both the forearm and the brain undergo alternate increase and diminution in volume.

VI. *The Cold Bath*.—The general cold bath (15° C.,—i.e., nearly 59° F.) gave the following results:

1. The volume of the forearm underwent an immediate and well-marked diminution. The form of the individual pulsations was no longer recognizable, being masked by the fibrillary contractions of the muscles of the limb. After twenty-five or thirty minutes the oscillations of elasticity again became evident.

2. In the brain a steady and progressive increase of volume is observed. The outline of each pulsation decreases considerably at first, but after half an hour exceeds the normal tracing in height.

3. The frequency of the pulse, at first increased, afterwards undergoes a slight diminution.

VII. *The Warm Bath*.—The authors, in their experiments on the warm bath, repeated several times, have not verified either the diminution of the tonic of the cerebral vessels noted by Bergesio and Mosso as a persistent effect of this hydrotherapeutic agent, nor that brief initial period of three or four minutes in which, according to them, there is rapid congestion, chiefly venous, of the brain. From the tracings taken by the authors, it results, on the contrary, that during the whole period of the warm bath there is a slight degree of constriction of the cerebral vessels, which sometimes takes place immediately on getting into the bath, sometimes a few minutes later. The volume of the brain was, as a rule, diminished from the first moment; sometimes, however, there was a slight rise at the commencement. In any case, after a few minutes, a manifest and persistent anæmia was established. This result is in agreement with the observations of Bergesio and Mosso. In every case the tracings of the forearm gave evidence during the entire duration of the experiment of diminished vascular tone and of

increased size of the limb. This condition commenced from the moment of immersion.—*London Med. Record*, January 17, 1887.

THE PHYSIOLOGICAL AND THERAPEUTIC ACTION OF URETHAN.

DR. A. P. LANGOVOL, of Moscow, gives (*Vratch*, No. 7, 1887, p. 179) the following summary of the results of his own experiments on the physiological and therapeutic effect of urethan: 1. The hypnotic effect of urethan manifests itself in different kinds of animals in different degrees. Thus, it produced a powerful effect on rabbits, while it acted very slightly on dogs. 2. Even large doses of urethan had not any marked poisonous effect on the heart, nor did they depress the arterial tension. 3. Breathing is quickened by urethan. 4. The drug is well borne by patients, has not a disagreeable taste, and does not cause any gastric disturbance. 5. Given in ordinary medicinal doses, urethan does not produce any unpleasant secondary effects, such as failure of the cardiac action, etc. 6. Its chief effect is on the brain; it does not seem to act on the peripheral nervous system. At all events, in cases of sleeplessness from cough or pains, it has no marked effect. 7. Urethan is not a powerful hypnotic, and in certain cases it is inactive or nearly so. Nevertheless, as it has no tendency to produce any untoward secondary effects, it may be regarded as a faintly useful addition to our therapeutical resources. It is a useful hypnotic in nervous insomnia, as well as in sleeplessness in the course of acute fevers.—*The British Medical Journal*, March 19, 1887.

ACUTE EPIGASTRIC PAIN IN PUERPERAL ALBUMINURIA.

In the *Lancet* for April 2, 1887, Mr. JOHN PHILLIPS calls attention to an important but apparently neglected premonitory symptom which sometimes occurs in cases of albuminuria in pregnancy. While cephalalgia and derangement of vision are recognized as precursors of puerperal eclampsia, Mr. Phillips refers to five cases in which the albuminuric pregnant women were suddenly attacked with an epigastric pain. Although these instances are so few in number as to perhaps be insufficient to substantiate the conclusions Mr. Phillips would draw from them, they indicate the reality of such a symptom occasionally existing and the necessity for prompt

treatment. The pain passes from the epigastrium to the back of the lower chest; it may be variable in degree, but is usually agonizing in character. Pressure and vomiting appear to relieve it somewhat. It is paroxysmal, and, although usually occurring ante-partum, may, as in one case detailed, arise afterwards. Convulsions may or may not follow its advent. The pain appears to arise from some perversion of nutrition of the solar plexus; probably the circulation of vitiated blood in its substance may be the primary factor. Another point in favor of its nervous origin is that three out of the five patients suffered severely from neuralgia in other parts of the body.

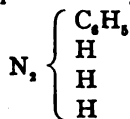
"AMYKOS" IN CATARRH AND GONORRHOEA.

In the *Russkaia Meditsine*, No. 46, 1886, p. 793, DR. J. J. TRUSEWICZ, of St. Petersburg, draws attention to "amykos," an antiseptic fluid prepared in Upsala and extensively used all over Sweden and Finland. Its essential constituents seem to be boracic acid and thymol. Diluted with two or three volumes of water, amykos makes a good injection or irrigation in acute and subacute coryza and syphilitic rhinitis. The author also found solutions of amykos very useful as collyria in acute conjunctivitis and as irrigations in catarrhal otitis. The best results, however, were obtained in acute and chronic gonorrhœa; the burning pain on micturition was immediately relieved, and after two or three days the discharge became mucous instead of purulent. It is well to begin with weak injections (one part of amykos to four parts of water). After two or three days the strength of the solution may be gradually increased. In mild cases the disease was cured in about a week. When the mucous discharge does not cease about that time, some astringent, such as sulphate of zinc or acetate of lead, should be added to the amykos solution.—*The British Medical Journal*, March 19, 1887.

ANTITHERMIN.

"Antithermin" is the name that has been proposed for a new synthetically-prepared compound which has just been added to the army of antipyretics (*Nouv. Remèdes*, March, p. 102). The systematic name of the compound is "phenylhydrazinlevulinic acid," from which it is evident that it has a near chemical relationship with "antipyrin." It will be re-

membered that one of the intermediate products in the formation of this widely-used antipyretic is phenylhydrazin, the composition of which is represented by the formula



This compound has the property of combining with other compounds to a remarkable extent, as, for instance, with aldehydes, ketones, sugars, and ketone acids, antipyrin being, in fact, a methylated derivative from a compound of phenylhydrazin with acetoacetic acid. The new antipyretic is a compound of phenylhydrazin with acetopropionic acid, a homologue of acetoacetic acid, to which the name levulinic acid also has been applied, because it can be prepared by oxidizing levulose. Phenylhydrazinlevulinic acid, or antithermin, is said to be obtained by dissolving phenylhydrazin in dilute acetic acid, and adding to it a solution of levulinic acid, which gives rise to a yellow precipitate that yields well-formed crystals upon recrystallization from alcohol.—*Pharmaceutical Journal and Transactions*, April 2, 1887.

THE MECHANISM OF THE THIRD STAGE OF LABOR.

At the meeting of the Obstetrical Society of London, held April 6, 1887, DR. CHAMPNEYS (*British Medical Journal*, April 16, 1887) read the continuation of his paper with the above title, the first part of which has been already brought before the readers of the GAZETTE.

The author in this contribution deals with "the Expulsion of the Placenta." The author reviewed the literature of the subject, including the observations of Lemser, Salin, Duncan, Schultze, Ribemont, and Ahlfeld. He then gave his own observations of 70 cases, carefully observed and tabulated, as regards the manner of the expulsion of the placenta and the blood-loss in each case; the measures of the membranes and presenting-point of the placenta were given in the table. The foetal surface presented in 64, the maternal in 2 (in both of which the cord had probably been pulled upon), the amnion in 4. Adding his results to those of Pinard and Ribemont, Dr. Champneys found that the foetal surface presented in 127, the foetal edge in 27, the maternal surface in 5. The presenting-point was nearer the lower edge of the placenta in 65, nearer the upper edge in

1, midway in 2, no note of its position in 2. The lower edge, or amnion below the lower edge, presented in 16. In the great majority of cases a point within two inches of the edge presented, but on the foetal surface. There was a complete absence of fundal attachments. It was found that the presenting part varied in its position with the position of the placenta. The higher the placenta the higher the presenting-point, and *vice versa*. The average loss of blood before the expulsion of the placenta was six ounces, in the membranes or with the placenta six ounces, making an average of twelve ounces for each labor, not including *post-partum* hemorrhages. Hence a moderate loss of blood was a normal phenomenon of the third stage of labor. Dr. Champneys's final conclusions were—1. That some measurable hemorrhage was a normal constituent of the phenomenon of the third stage of labor; 2. The placenta presented in the great majority of cases by a point on the amniotic surface; 3. The presenting-point was almost invariably near the lower edge of the placenta; 4. The position of the presenting-point varied with the position of the placenta; 5. The "inversion" of the placenta was not due in the great majority of cases to traction on the cord, but was part of the natural mechanism. These observations, therefore, accorded in essentials with those of Schultze, though his diagrams were greatly exaggerated. These observations bore on the opinion previously expressed as to the causes and mode of separation of the placenta. Therefore (1) it was probable that, in addition to reduction of the placental site, some escape of blood played a part in the ordinary mechanism of placental detachment; (2) the slight inversion of the placenta which did take place was probably due to this cause; (3) the effusion of blood was not, in ordinary cases, sufficient to form a large mass bulging into a large uterine cavity behind the placenta.

DR. MATTHEWS DUNCAN congratulated the society on the elaborate papers just read, not only on account of their intrinsic value, but also because of their bringing the society into contributing to the progress of the greatest obstetric work of the century. In the history of midwifery there were only three works of the very highest class as yet achieved. The first in scientific order of progress was done in the eighteenth century by W. Hunter, whose plates of the anatomy of pregnancy were its crown. The second was a work mainly of this century, and was known as the mechanism of parturition, and with it were

connected many names, especially those of Solayrer and of Nægele. The third was still incomplete,—the greatest, most difficult, and most glorious of all, a work of the nineteenth century, the anatomy of labor. In this country no name was so great in the anatomy of labor as Barbour, and he was actively engaged in it at this moment. No contribution to it had come from London, and the papers of Dr. Champneys he hailed as worthily bringing a part of it before this society. The anatomy of labor made no progress till the introduction of complete sections of frozen bodies. No such sections had been done in London, and nowhere had such sections been made in the third stage of labor. The work of Dr. Champneys was mainly physiological, and should come after the completion of the anatomy of the third stage, for the subject of his work would not be settled till the anatomy was finished. Failing to find bodies for the sectional anatomy of the third stage, obstetricians had examined the uteri of the operation of Porro. This was an imperfect substitute for frozen sections, and might be very misleading. The Porro uterus examined by Barbour showed that the placental area might be contracted to a diameter of four inches without separation, and the absence in these cases of hæmatoma was hostile to the theory of separation by utero-placental hemorrhage, but it did not disprove it. Absence of separation with contraction to an area of four inches in diameter seemed to astonish many and to favor the detrusion theory of separation. Dr. M. Duncan always imagined a much greater contraction as necessary for separation. He referred to his own paper of 1871, which was now a matter of "ancient history," and would not be praiseworthy at this date; yet, admitting its imperfections, he was still an unbeliever in the presence of hæmatoma in a natural separation in a theoretically natural case, and he continued to hold that the cake descended edgewise through the cervix, and referring to Dr. Champneys's table, columns A and B, confirmed this. The old detrusion theory of separation he had found difficult to make intelligible. He could not understand the production of detrusion till after separation. He could not imagine detrusion pushing off the lowest flap (as in the Porro case exhibited by Dr. Galabin) without pushing off all above it.

DR. GALABIN understood that the author had not come to a decided opinion whether the separation of the placenta was from the periphery to the centre, or *vice versa*. Dr.

Galabin thought this depended on the cause of separation. If the cause were from shrinking of the placental site, separation must be from the periphery inwards. If hemorrhage were the cause, it must occur away from the margin, and could only effect a separation from the centre towards the periphery. Even if it were admitted that an effusion of blood was normally present, it did not follow that the hemorrhage was a cause rather than a consequence of detachment. Dr. Galabin thought that the Porro uterus was in favor of shrinking of the placental site, with possibly detrusion as a cause of detachment, and not hemorrhage. Detrusion, acting as a supplementary cause of shrinking, would cause detachment of the lower margin first. As regards the mechanism of expulsion, he thought it depended on the management of the third stage of labor. In Salin's cases, the placenta presented at the os by its lower margin, and there was no inversion. In Champneys's cases there was partial inversion. In Lemser's cases, the upper edge usually presented. The probable reason was that the management of Salin's cases promoted the best uterine contraction; that of Lemser's the greatest relaxation; that of Champneys an intermediate condition. Dr. Galabin did not think that leaving the uterus unsupported, with the patient on her side and the fundus dependent, would give the most ideally natural mechanism.

DR. HANDFIELD JONES thought that an ideally healthy labor was bloodless as regards the separation of the placenta, though variable amounts might flow afterwards.

DR. BOXALL thought there were causes for separation of the placenta not mentioned in Dr. Champneys's papers. After the birth of the child, the conditions were profoundly altered, the flow of blood from the foetal portion of the placenta to the lungs ceasing, the thin lamina of maternal tissue is deprived of support towards the cavity of the uterus. The position in which the placenta is implanted on the uterus Dr. Champneys had shown to be important, and this again is indissolubly connected with the separation of the membranes. As long as the membranes at the edge of the placenta remained adherent to the uterine wall, inversion of the placenta was maintained. If any portion of the attachment gave way, the adjacent margin of placenta, being no longer supported, became the most dependent part, and the sub-placental hæmatoma found an exit of escape, and the lower the implantation of the placenta, the

more easily would this happen. There were other causes that altered the process of detachment, as pulling on the cord and abnormal adhesion. Dr. Boxall explained a series of experiments which he had made to determine the placental presentation by means of staining. He also confirmed Dr. Champneys's remarks on the rarity of fundal attachment of the placenta. He had found the fundus overlapped (to the extent of an inch and three-quarters) only once. Out of 100 cases, he should say that the placenta would occupy the upper zone in 21 cases, the middle zone in 77, and the lower zone in 2.

"MASSAGE" FOR THE TREATMENT OF CORNEAL OPACITIES.

There are, perhaps, no affections of the eye which cause more disappointment to both surgeon and patient than the opacities of the cornea which are left by keratitis and ulceration. After prolonged and varied treatment, the inflammation, which has perhaps undergone many remissions and relapses, finally subsides, only to leave an eye which is practically useless, owing to the loss of transparency of a great part of the cornea. So many different modes of treatment have been suggested for this condition, and, after trial, have been abandoned as useless, that there is much natural scepticism as to the efficacy of any new proceeding, and most surgeons trust to the effect of time and Pagenstecher's ointment. In a paper read before the British Medical Association at Brighton, MR. SNELL redirected attention to friction or "massage" as a mode of hastening the disappearance of corneal opacities. Although not capable of effecting all that was at one time claimed for it, it has now stood the test of time, and may fairly be said to have met with more success than any other single mode of treatment. First proposed by Pagenstecher, in 1872, as a means of hastening the absorption of corneal opacities, it has since been advocated by many writers. But Dantziger (*Archiv für Ophthalm.*, xxxi. 3, 187) has shown that its sphere of usefulness can be considerably enlarged, if it be preceded by the mechanical removal of the opaque corneal tissue by scraping. The employment of "massage" during cicatrization then prevents the newly-deposited tissue becoming opaque. Although there is some difference of opinion on points of detail, the following is probably the best mode of employing the "massage." The inner surface of the eyelid should be lubri-

cated, preferably with Pagenstecher's ointment; the pulp of the finger is then laid on the lid, and the latter moved to and fro over the cornea with great rapidity, in a direction radiating from the centre of the cornea. The operation is continued for about a minute, and repeated daily, as long as improvement continues to take place. The results of Dantziger's cases would encourage us to persevere for a considerable time. In a patient in whom a corneal opacity had existed for four years, and in whom vision was reduced to the counting of fingers at six feet, gradual improvement continued to take place during the whole five months during which the "massage" was continued: vision being fingers, at 15 feet after two weeks; 12 J. after twelve weeks; and $\frac{20}{200}$ and 8 J. at 5 inches after five months. No doubt the necessity for continuing the treatment for so long a time has hindered its adoption; but an intelligent patient can easily be taught to perform the "massage" for himself. The preliminary removal of the corneal opacity would seem best adapted for cases of dense opacities affecting a limited area. Cocaine produces sufficient anæsthesia, the reaction is considerable, and usually lasts till the fifth or eighth day. The "massage" may be commenced as soon as the epithelium has been re-formed, the presence of vessels on the cornea not being considered a contraindication. Some cases seem to be unsuited for this treatment, and suffer after the "massage" from prolonged injection of the conjunctiva; but cases of old opacity, in which all the inflammatory symptoms have long subsided, appear to be more benefited by it than by any other mode of treatment.—*The Lancet*, April 2, 1887.

ACETYL-AMIDOPHENOL.

Still another antipyretic that is threatened to invade us from Germany is described variously as being p-acetphenetidin (*Cent. f. Med. Wissen.*, 1887, No. 9) and p-acetphenidin, or acetylated p-amidophenol, $\text{NH}_2\text{C}_6\text{H}_4\text{OCH}_3\text{CO}_2\text{H}$ (*Pharm. Centralh.*, March 17, p. 143). A writer in the *Pharmaceutische Zeitung* (March 26, p. 178) points out that this leaves the identity of the compound still in doubt, for not only is the formula given inconsistent with either name, but that para-amidophenol is theoretically capable of yielding two acetyl derivatives, an acetyl residue replacing hydrogen in the NH_2 group in one and in the HO group in the other. Probably, however, as the compound is the subject of a patent, this

is of little practical importance. The compound is said to occur in small colorless or faintly reddish needles, which are tasteless, difficultly soluble in water, but somewhat more freely soluble in alcohol and strong acetic acid, and melt at 135° C. The preparation is given in doses of 0.2 to 0.5 gramme; but according to Messrs. Hinsberg and Kast, who have experimented with it, doses of 1 to 2 grammes have proved harmless. Up to the present time this new antipyretic does not appear to have been favored with a trivial name; but should it come into sufficient use to make one desirable, it may be hoped that an effort will be made to get outside the monotony of "anti," which now threatens to become a source of confusion.—*Pharmaceutical Journal and Transactions*, April 2, 1887.

THE TREATMENT OF SYPHILIS.

At a recent discussion at the Medical Society of London on a paper read by MR. MILNER, divergent opinions with regard to the treatment of syphilis were expressed, and some valuable and interesting remarks were made by DR. LAUDER BRUNTON and DR. ALTHAUS. The effect of mercury in controlling to some extent the secondary manifestations of syphilis is assumed to be due to its properties as a germicide, and the same convenient explanation is given of the undoubtedly beneficial action of iodide of potassium in the later stages. It was pointed out, however, that the effects of iodide of potassium or sodium are due, not to the iodine, but to the salt, which is not a germicide. Further, it was remarked by several speakers that the action of the iodides, while prompt and certain in dissipating the local symptoms which are supposed to belong to the later stages of syphilis, is not permanent. It has, indeed, been generally recognized that the iodides of potassium and sodium are only indicated in the lesions which occur in various tissues from the action of the virus in the past. Dr. Brunton appeared disposed to allow that mercury might owe its effect in syphilis to its action as a germicide, and observed that whatever its influence on the diseased germ, it was detrimental to the tissues. Further, there was a very general expression of opinion that iodide of potassium, like mercury, was not a drug to be trifled with; and the propriety of employing mercury, even in the later stages, found several supporters. Inunction as a method of treatment has become more systematic of

late years, especially since pharmaceutical research has placed at our disposal more elegant and convenient preparations for the purpose.

Dr. Althaus spoke very highly of the oleate of mercury as a cleanly and readily-absorbed preparation, and the peculiar qualities of lanolin as a vehicle for the administration of drugs, and particularly mercury, by the skin, also elicited expressions of approval. For severe cases the intra-muscular injection of mercury in some form or another, as practised by Mr. J. Astley Bloxam at the Lock Hospital, is productive of good results, though patients are apt to resent the pain which accompanies its introduction. Each method of mercurial administration possesses certain advantages. A clear and well-defined classification of the indications for each method is still wanting, though Dr. Milner has filled the gap to some extent in the paper referred to.—*British Medical Journal*, March 12, 1887.

GLANDULAR SWELLING CURABLE BY ARSENIC.

At a meeting of the Clinical Society of London, held March 25, 1887, MR. FREDERICK TREVES (*Lancet*, April 2, 1887) read a paper on "A Form of Glandular Swelling which is Cured by Arsenic." He drew attention to the obscurity that attends both the pathology and the clinical history of certain chronic glandular affections. These affections are covered by such terms as the following: hypertrophy of glands symptoms, malignant lymphoma, lymphadenoma, Hodgkin's disease, and lymphosarcoma. These glandular swellings are considered to be un-inflammatory, have no relation to scrofula or syphilis, and are clearly separated from the gland disorders that attend leucæmia. They possess the common characters of a slow origin without apparent cause, a slow but progressive growth, and an absence of all inflammatory phenomena. Histologically there would appear to be no means of distinguishing one of these affections from another. Apart from this, objection may well be raised to the terms hypertrophy and lymphoma. Without limiting himself to any special term, Mr. Treves desired to draw attention to the clinical aspects of a certain form of non-leucæmic gland-enlargement that could be cured by arsenic. The patients are usually past middle age; they present no peculiar constitutional defect; there is no suggestion of gout, rheumatism, or scrofula. There is no leucæmia.

The neck is usually involved. The gland-tumors appear on both sides without disturbances in the periphery. The masses vary in size from a hazel-nut to a duck's egg. They are soft, elastic, homogeneous, movable, painless, and free from tenderness. They show a disposition to spread without limit. The temperature is normal, and suppuration does not take place. Mr. Treves gave instances of the cure of such cases by the use of arsenic. The drug is given in the form of liq. arsenicalis, commencing with a dose of 5 minims, and increasing to 20 minims three times a day. The treatment has to be kept up for some months, one to six. The glands waste, some few suppurate, and in such instances the resulting sinuses heal without further treatment. In cases where the whole neck has been filled with great glandular masses the tumors have wholly disappeared after a treatment of from four to six months. Some of these cases, at least, would probably be covered by the term Hodgkin's disease. Mr. Treves concluded by an allusion to Dr. Köbel's paper on the treatment of malignant growth by arsenic administered by the mouth, and also hypodermically.

MENTHOL.

LANGAARD writes as follows in the *Therapeutische Monatshefte* for March, 1887 :

Although menthol was known to chemists for years it was only recently brought to the notice of medical men by Macdonald, and its antiseptic and analgesic properties known : it has been used chiefly in the form of "head-ache" or "migraine" pencils. Experiments to show its adaptability to internal use have been comparatively neglected by physicians, and yet it is true that menthol has a distinct and considerable value which makes it appropriate, if not as a specific, still as an agent of very considerable power in subduing certain symptoms of disease. The neglect to use menthol extensively has doubtless arisen from the lack of literature calling attention to its merits ; the recent experiments of Rosenberg in the treatment of phthisis by menthol make it appropriate to summarize our knowledge of this drug.

Menthol, also called peppermint camphor, is the stearopten of the ethereal oil of peppermint. By cooling to the freezing-point menthol separates in crystals, which are freed from the superfluous oil and are cleansed by distillation. The quantity of menthol contained in German and English samples is so small that the preparations have little value.

American, and above all Chinese and Japanese, samples are most rich in menthol. The two last furnish often pure menthol, containing but little oil, crystalline at ordinary temperatures, and were formerly known to chemists as *oleum menthol Japonicum crystallisatum*.

The great difference in the amount of oil in the different samples of menthol is owing to the differing descent and species of different plants of the mint family. Very different accounts are given of the plant from which are derived the Chinese and Japanese oils. Holmes, who believes that it is possible to distinguish between them, has recently designated the Chinese as *Mentha arvensis* L., var. *glabrata*, and the Japanese as *Mentha arvensis* L., var. *piperascens*. Formerly menthol was an article little used and expensive, but owing to its recent extensive use its price has become much less.

Menthol appears in colorless, shining, needle-shaped or column-shaped crystals, having a strong odor of peppermint and a peculiar cool, aromatic, bitter taste, burning slightly in the mouth. It boils at 212° C., melts at 43° C., and is but little soluble in water, but gives to water its odor and taste. Spirits of wine, ether, and chloroform dissolve it freely ; it is also soluble in oils, fats, and glycerin. When placed over a water-bath it melts to a colorless clear fluid, and should be entirely without sediment of paraffin, wax, or magnesium sulphate : it should be also clear in alcohol, and dissolve without sediment. In a mixture of one cubic centimetre acetic acid with three drops sulphuric acid and one drop nitric acid menthol should remain colorless ; a muddy discolored solution results when thymol is added. The formula of menthol is $C_{10}H_{20}O$: its chemical composition is unknown. Menschutkin believes that it belongs to the series of secondary alcohols. Fischer considers it not impossible that menthol is a "reproductive product" of Borneo camphor, namely, the common Japanese camphor.

Although peppermint and its ethereal oil had been used since very early times by internal administration as an analgesic and antispasmodic in cardialgias, colic, and spasmodic pain by physicians and also the people, the external use of the active principle of this plant to relieve neuralgias, which was formerly common, had fallen entirely into obscurity. Pliny mentions its use in headaches ; the Chinese and Japanese have employed oil of peppermint and menthol from very ancient times as an analgesic, especially successful in nervous and rheumatic head-

aches and in the pains caused by carious teeth. Wright, who had learned the use of menthol in China, reported its good effects in the *Lancet* in 1870. Delieux de Savignac wrote also at this time regarding it.

Under the name of "Po-ho," or "Japanese drops," put up in small flasks, whose labels were in Chinese characters, menthol found common use as a cure for headache.

Macdonald was the first to use pure menthol and report its effects. When menthol, in the form of "migraine pencils," in alcoholic solutions or in ointments, is applied to the unbroken skin, there follows at first a feeling of coolness in the spot where was the menthol, which endures ten or fifteen minutes, and is succeeded by a slightly burning sensation. Neuralgic pains in the region so treated ceased in a few moments, returning perhaps in a quarter of an hour. The working was most pronounced in neuralgia of the head and face, although Law has reported good results in the treatment of intercostal neuralgia by menthol.

Neuralgias situated more deeply are not affected by such applications, although gouty and rheumatic pains are thought to be improved. The favorable results obtained by Macdonald have been repeated by others, and these successes, generally transient, have brought the "pencils" into common use.

The sensation of coolness which follows the application of menthol has given rise to the attempt to produce a similar general effect by a more extensive evaporation of the drug. The investigations of Goldscheider have proved that menthol has a direct influence upon the peripheral nerve-endings. He has also brought forward the interesting fact that the sensation of cold by delayed evaporation is found only in certain localities in the body; that in other portions of the body, as on the flexor side of the forearm, a sensation of warmth, instead of coolness, follows the application of menthol.

Russel has directed attention to the antiphlogistic properties of menthol. Pain, itching, heat, and swelling are greatly lessened after its local use. This point has not been, as yet, fully elucidated. Should menthol be proved of value as an antiphlogistic, a wide field of usefulness would be opened to it. In itching exanthemata and painful hemorrhoids its use may be greatly extended.

Menthol is most commonly used in the form of pencils; its solutions or ointments, although possibly not so convenient, are probably more lasting in their effects.

Macdonald used a ten per cent. alcoholic solution. Steward used a solution in bromethyl. The following is a formula for a useful ointment:

R Mentholi, 1 part;
Ol. olivari, $\frac{1}{2}$ part;
Lanolini, $8\frac{1}{2}$ parts. M.
F. unguentum.

Sig.—Lanolin migraine ointment.

For many uses, as applications to the mucous membranes, the following formula, which gives a semifluid product, is useful; the substance resulting may be conveniently applied by a camel's-hair pencil:

R Mentholi, 1 part;
Dissolve in
Ol. olivari, 3 parts, and add
Lanolini, 6 parts. M.
F. unguentum.

In the treatment of burns the following lotion may be used in place of ointments:

R Mentholi, 1 part;
Dissolve in
Ol. olivari, 9 parts, and add
Aq. calcis, 10 parts. M.
F. linimentum.

Menthol may also be used in combination in plasters, and has in this form manifold applications.

For toothache from caries a small crystal of menthol may be placed in the hollow tooth, or a mixture of equal parts menthol and chloral hydrate. As is the case when camphor and chloral are mixed, a fluid results. A pledget of cotton may be saturated with menthol chloral and placed in the hollow of the tooth.

Rabon recommends menthol as snuff in the treatment of coryza. The effect of menthol as a local anæsthetic is much weaker than its analgesic effect. The proposal of Rosenberg to combine menthol with cocaine for the production of local anæsthesia in the nose and pharynx cannot be considered of great value. In the treatment of reflex neuroses, whose origin was the nasal cavity, Rosenberg obtained excellent results with small bougies of glycerin and gelatin which contained one-sixth grain of menthol; these were inserted into the site of the lesion.

In ophthalmology menthol cannot be used as an addition to cocaine. Schmitz witnessed marked symptoms of great irritation, painful, burning sensations, photophobia, hypersecretion of tears and conjunctival injection per-

sisting for several hours after its instillation into an eye.

In addition to its antineuralgic effects MacDonald found that menthol in one-tenth per cent. alcoholic solution was as potent in hindering the development of bacteria as a solution of carbolic acid two-tenths per cent. The writer (Langaard) made investigations regarding the antiseptic effect of menthol in Japan in 1878. The results were so unsatisfactory that no attempt was made to use menthol in wounds: the great quantity of fluid required in its application, its slight solubility in water, and the inconvenience of the use of oily solutions render menthol of little value for this purpose. It is not impossible, however, that its peculiar properties may render it of value in the treatment of infectious diseases.

Cutter observed the happiest results from menthol inhalations in epidemic influenza.

Salisbury treated a case of diphtheria with hourly doses of $\frac{1}{10}$ of a grain; complete recovery followed in twenty-four hours.

Inhalations of menthol would be indicated in diphtheria in addition to its internal use.

Rosenberg's use of menthol in phthisis is based upon its antiseptic properties.

The good effects of preparations of peppermint in many forms of stomach and intestinal catarrh are well known. Menthol is indicated in abnormalities in the solution and decomposition of food in the stomach and intestines.

Koch found that oil of peppermint destroyed cholera bacilli in solutions of 1 to 2000. The internal administration of considerable doses of menthol, combined with enemata of menthol-water, should be tried in cholera. We possess in menthol a remedy which is not dangerous when given in large doses, and which in its dilute forms exercises an energetic influence in destroying the lower organisms. In its internal use its analgesic and anæsthetic properties are valuable in cardialgia, colic, and to check emesis.

Its use is contraindicated in threatened ulcer ventriculi. The first careful observations regarding the more remote effects of menthol were made by Pellacani. He found it to be a paralyzant of the cerebro-spinal nervous system, obtunding, and in large doses destroying, sensation and reflex sensibility, increasing the respiratory rate and lessening the depth of the respirations.

Menthol stimulates the heart-muscle; it does not affect the frequency of the pulse, but, like camphor, it produces periodic increase in arterial tension.

It is indicated as an antispasmodic, to lessen reflex irritability and as a sedative.

We know little regarding the influence of menthol upon the secretions. Schmitz asserts that it stimulates the secretory nerves, and is therefore indicated in stomach and intestinal troubles with deranged digestion; in chronic pulmonary catarrh with tenacious secretions and scanty sputa.

Delieux de Savignac, whose observations were made with oil of peppermint, reports a diminution in the secretions of the mucous membranes, but an increase in perspiration and secretion of urine: a portion of the menthol taken is eliminated by the kidneys as menthol-glykuriic acid.

Regarding the influence of menthol upon the temperature we know nothing; according to Markuson, inhalations of oil of peppermint produce a fall of temperature. For the internal use of menthol pill form should be chosen, as follows:

R Mentholi, gr. xxx;
Sacchar. albi,
Gummi arab., aa gr. xv;
Aq. dest., q.s.
Ut f. pil. No. xx. Obduc. gelatina.

To make a pill which shall retain the properties of the drug, the menthol should be mixed with sugar, moistened with spirit, and the mass thoroughly rubbed until the alcohol has evaporated. The gum may then be added, and after, by thorough rubbing, a homogeneous mass has been made, it may be made into pills on the addition of a little water; a few drops only are commonly needed. Each pill contains one and one-half grains. In this form large quantities of the drug may be given without burdening the patient.

POISONING BY BISMUTH USED AS A SURGICAL DRESSING.

According to the Paris correspondent of the *British Medical Journal*, April 2, 1887, M. P. DALCHÉ recently brought a case of poisoning by subnitrate of bismuth dressings under the notice of the Société de Médecine Légale de France. A woman, aged 30, was under the care of M. Peyrot for two burns. One of these was of the third degree, and extended from the lower angle of the shoulder-blade to the gluteal region, occupying the entire width of the back. The other was a large burn on the left arm. On September 26 these wounds were dressed with subnitrate of bismuth. The dressing, though changed every

second day, became very offensive. The general condition of the patient had been improving; but on October 11 the throat became sore, and she complained of dysphagia. False membranes of a white color were seen on the palate, the uvula, and the tonsils. On October 13 the patches had spread; the mucous membrane round them was black; and the edge of the gums of the lower jaw was rough, and dark brown in color. There was also a patch of false membrane on a base of blackened mucous membrane on the lower lip. The general condition was, however, still good, and there was no albumen in the urine. A few days later the breath became offensive, and there was gangrene of the palate. On the 26th the patches above described had partly disappeared, but there was a burning sensation under the tongue. There was violent diarrhoea and continual vomiting. Some patches of false membrane on the buccal surface of the cheeks had a rough black edge. The bismuth dressing was then given up. Up to November 1, vomiting, diarrhoea, and hiccough persisted, and there was albumen in the urine. On November 5 there was pain along the œsophagus. Several of the patient's teeth became loose. In spite of this she continued to improve, and recovery was complete by the middle of December. M. Dalché is convinced that the bismuth dressings were the cause of the lesions observed, which were not the lesions characteristic of diphtheria, nor of any known form of stomatitis. The bismuth was pure; it was present both in the fæces and in the urine.

PHYSIOLOGICAL ACTION OF NITROUS OXIDE GAS.

DR. DUDLEY BUXTON has communicated two valuable papers upon the above subject to the Odontological Society, based upon numerous clinical observations and experiments. The effects of nitrous oxide inhalation upon the mammalian organisms are, he says, broadly speaking,—(1) a condition of anæsthesia; (2) an emotional state, provoking a sensation of exhilaration,—in fact, it plays the rôle of a stimulant; (3) it gives rise to modifications of the respiratory and (4) circulatory systems; and (5) provokes marked muscular movements, which may be classed as (a) rigidity and (b) jactitations. The anæsthesia produced by nitrous oxide is not dependent upon analgesia or loss of sensation of painful impressions of the sensory end-

organs, such as that produced by cocaine, etc., or upon failure of the conducting sensory nerves, for sensation is retained until the perceptive powers themselves cease to receive; moreover, there is immediately anterior to the loss of consciousness a hyperæsthetic stage, therefore it may be concluded that the nerve-centres are acted upon. The ways by which nitrous oxide may enter the system and is enabled to produce its special effects are,—either that it gives rise to other bodies by changes in its chemical form, or by acting as an irrespirable gas and causing asphyxia, or by exercising a specific action, just as strychnine does. Dr. Frankland came to the conclusion that nitrous oxide was not decomposed during its sojourn in the body, basing his opinion upon analyses made of the air expired by rabbits when confined in an atmosphere of mixed air and nitrous oxide. In the first stage of asphyxia, that of dyspnoea, there is an increase in the respiratory movements, both inspiratory and expiratory; in the second, predominance of the expiratory efforts, culminating in general convulsions; in the last, exhaustion, with long-drawn inspirations, gradually dying out. The blood-pressure during the first and second stages rapidly rises. Dr. Dudley Buxton has never observed an increase in the expiratory movements when HO_2 has been administered, which are merely increased in number and depth, or expiratory convulsions, notwithstanding the gas has been pushed to its utmost limit, and from a large number of sphygmographic tracings the tension in the arteries has been lower than normal. In experiments upon dogs, Dr. Buxton found that where a trephine hole was made through the skull, during the inhalation of the gas the brain pulsations became more forcible and somewhat hurried; then the brain-substance was seen to swell up, until at last it actually protruded through the aperture; whereas in a similar experiment with the trachea occluded, the brain receded, sinking away from the opening. Other experiments showed that the heart's action was but little interfered with by nitrous oxide, even where the inhalations were pushed until respiration was interrupted. During asphyxia, on the other hand, a rapid and continuous increase in blood-pressure invariably occurred. The dose of nitrous oxide required to produce insensibility varies very considerably in different persons,—a fact which supports the view that nitrous oxide exerts a specific action on the nerve-centres. Dr. Buxton also discusses many other inter-

esting points in the action of the gas, such as the occurrence of hallucinations.—*The Lancet*, April 9, 1887.

THE EFFECTS OF THALLIUM SALTS ON GONOCOCCI, AND ON THEIR EMPLOYMENT IN THE TREATMENT OF GONORRHOEA.

DR. KREIS obtained pure cultures of gonococci by inoculating with gonorrhœa pus a nutritive medium, consisting of agar-agar (Ceylon moss, *Graciellaria* or *Plocaria lichenoides*) and of meat-peptone, and exposing this to a temperature of 36°–38° C. (96.8°–100.2° F.). After a series of carefully and repeatedly controlled experiments, he ascertained that even weak solutions of only one-fourth to one-half per cent. of sulphate of thallium completely destroy the cultures of gonococci. He also tested the effects of the same solutions on divers other kinds of bacteria,—viz., on those in anthrax and glanders, on the staphylococcus aureus, and on urine micrococci, and found that they likewise kill, without exception, all these micro-organisms. PROFESSOR GOLL subsequently practically proved these theoretical conclusions by employing thallium salts with the most satisfactory results in the treatment of gonorrhœa by injections of solutions containing one and one-half per cent. to two per cent. of thallium salts, hereby shortening by fourteen to eighteen days the duration of cure compared with other methods. Referring to these injections, Professor Goll remarks: "For the success of the injections much depends upon the manner in which they are administered. An easily-working syringe with a slightly bulbous point, holding ten cubic centimetres of fluid, ought to be used. Each injection must be double; the first is left to flow off immediately, while the second is retained for a few minutes. It is advisable fully to instruct the patient in this manipulation, the medical attendant making a few injections himself, and having afterwards some made in his presence by the patient. Without these precautions the injections will be but imperfectly made, which is most frequently the case, and explains the many failures of the treatment of gonorrhœa by whatever kind of injection. The well-known complications with irritability of the bladder, cystitis, and especially epididymitis, very rarely occur during a properly carried out treatment with thallium salts, and in the majority of cases not at all. Certain forms of incipient cystitis, pyelitis, and pyelo-nephritis, and similar affections of the urinary organs,

caused by the migration of gonococci into the lymphatic ducts of the mucous and sub-mucous membranes, or by formation of pus and decomposition of the urine, may in many cases, by a combined treatment with thallium preparations, be arrested, or at any rate more rapidly subdued, than by other remedies." Professor Goll further states that he has no experience on the influence of the sulphate of thallium on gonorrhœa in women, which frequently gives rise to very troublesome combinations (see Bumm, *Gonorrhoeische Schleimhaut Erkrankungen beim Weibe*, Gonorrhœic Diseases of the Mucous Membrane in Women, 1885); but he confidently expects favorable results in these cases also. He particularly recommends thallium bougies as very efficacious and easily applied in private practice, especially in the treatment of chronic gonorrhœa. He at present employs for this purpose bougies of butter of cacao with five per cent. of sulphate of thallium. He also tried the tannate of thallium, but entirely discarded it, having found its action, like that of nitrate of silver, too intensely caustic and coagulating. It is of the greatest importance in the treatment of chronic gonorrhœa that the medicament be brought as high up as possible into the urethra, the seat of the disease very frequently being in the posterior portion of the passage. Bougies of butter of cacao are very easily introduced, and it matters little if they break within the urethra, as they may be, without difficulty and perfectly painlessly, pushed upwards to the seat of the disease by means of a common bougie of vulcanite or celluloid. Preparations of thallium will very likely soon be extensively used, and form an important remedy in the treatment of gonorrhœal complaints.—*London Med. Record*, April 15, 1887.

GASTRIC SYPHILIS AND SIMPLE ULCER OF THE STOMACH.

In a paper contributed by A. GALLIARD to the *Arch. Gén. de Méd.* (*London Med. Record*, April 15, 1887) the author discusses the question of syphilitic disease of the stomach, and the influence of syphilis in the pathogeny of ulcer of that organ. The existence of syphilitic affections may be shown by clinical or by anatomical evidence. It has been proved by observation that certain gastric troubles, occurring in the course of secondary or tertiary syphilis, may be successfully treated by mercury and iodide of potassium. M. Galliard, however, does not exaggerate the value

of such facts, since gastric troubles and hæmatemesis are not sufficient to prove a lesion of the stomach itself. Syphilitic disease of the liver, for example, like ordinary cirrhosis, may cause hæmatemesis. The anatomical signs are divided by M. Galliard into disputable and indisputable; the former are gastric catarrh, hypertrophy of the walls of the stomach, and ulceration due to amyloid degeneration. The true syphilitic lesions of tertiary syphilis are gummata, ulcerated or not ulcerated. The author reports two clear cases of gastric syphiloma. Gastric cicatrices found in syphilitic persons may be due to former gummata or to simple ulcers. They are only of moderate value in diagnosis unless gummata be also present, in which case it would be reasonable to consider the scars evidence of bygone specific lesions. When, instead of cicatrices, there are found in syphilitic persons ulcers having the characters of Cruveilhier's ulcer, the question ought to be asked whether the primary erosion was not of a syphilitic nature,—whether, for example, its occurrence was not determined by the gastric catarrh of secondary syphilis or by syphilitic arteritis. It is easy to understand that such an erosion, exposed to the contact of the gastric juice, may be capable of becoming a round, perforating ulcer. It is thus necessary to study with great care, both during the period of ulceration and that of cicatrization, the so-called simple ulcers of the stomach when they are found in syphilitic subjects. In this way the pathogenic influence of syphilis on the stomach, perhaps even the characters of ulcerating syphilides of the stomach, may some day be decided; and when the diagnosis has been made, such affections will be amenable to treatment and capable of cure; but at present the diagnosis is surrounded by difficulties.

Reviews.

A TEXT-BOOK OF PATHOLOGICAL ANATOMY AND PATHOGENESIS. By Ernst Ziegler, Professor of Pathological Anatomy in the University of Tübingen. Translated and Edited for English Students by Donald McAlister, M.A., M.D. Three parts complete in one volume.

William Wood & Co., New York, 1887.

The first part of Professor Ziegler's work on pathological anatomy was given to the English-reading student five years ago, two years later appeared the second part, and, finally, we have the complete work in part

three, issued during the present year. These several parts have now been published in one volume, making a complete text-book, the value of which is not exceeded by any other work in English, notwithstanding the unfavorable method of publication, by which the book as a whole has not received the latest views upon some of the subjects treated in the parts first issued. Having upon the publication of Parts I. and II. noticed their contents, we will now turn to the third part, which includes the pathological anatomy of the urinary organs, the respiratory organs, the central nervous system, and the peripheral nervous system.

The chapters which treat of the pathological lesions of the urinary organs embrace those of the kidneys, bladder, urethra, and supra-renals. A classification of kidney-diseases is made according to the etiology. Thus, 1. Those attributable simply to disturbances of the circulation. 2. Those produced by deposits in the kidney of solid substances, brought to it as such by the blood or precipitated from their solutions. 3. Those degenerations and inflammations due to impurities or disorders of the blood. 4. Those disorders traceable to injurious influences affecting the parenchyma of the kidney through the infundibulum. 5. Those due to tumors or new growths of the kidney. The question as to the nature of uriferous tube-casts is answered by considering them derived from several sources. Hyaline casts or cylinders are said to form in albuminuria as follows: The albumen comes from the glomerule in a soluble form, but within the tubules it may coagulate and give rise to a granular or homogeneous cast; or again, in inflammatory affections of the kidney, the albumen may be derived from the protoplasm of exuded white blood-cells, which is moulded to form casts. Epithelial cells which line the tubules may desquamate and become agglutinated into casts. Granular albuminoid and fatty products of their disintegration give rise to fatty casts. Blood-casts may form in the tubules when hemorrhage has occurred. Waxy casts are believed to be casts which have remained some time in the tubules, becoming more firm and dense. Another source of casts, besides those formed, at least in part, from transuded albumen, is the renal epithelium, which produces a colloid product either in the form of droplets that afterwards unite, or by a transformation of the entire cell when loosened from its place and carried to another part of the tubule.

In the inflammatory affections of the kidney a clinical classification is made of three chief types, viz., acute, chronic, and indurative nephritis. These varieties are again subdivided into other forms; indeed, it seems to us these subdivisions are unnecessarily too many, and occasion confusion in the study of this class of kidney-diseases. A simpler classification is desirable in describing the various pathological conditions of the kidney, which are essentially inflammatory in their nature, since the number of different lesions due to this cause are not essentially a new disease. As regards the attempt, however, to interpret the several forms of nephritis as stages of a single morbid process, we believe with the author that such an explanation cannot be satisfactorily made, and that we are in fact unable in a given advanced renal affection to determine how it began or what stages it passed through.

The section devoted to the respiratory organs includes the pathological lesions of the nasal cavities, larynx, trachea, bronchi, lungs, and also the thyroid and thymus glands.

The answer to the much disputed croup or diphtheria question is as follows: "It will be seen that we make no pathological distinction corresponding to that implied in the clinical terms croup and diphtheria. The specific infective disease diphtheria, when it is accompanied by croupous or superficial diphtheritic inflammation of the larynx or trachea, is the same as the affection clinically described as membranous croup, a term which the pathologist may well dispense with;" or, in other words, the two diseases have the same local pathological lesion.

The chapters on the various affections of the lungs and bronchi are fully abreast of the present period, and the descriptions of the histology of the pathological changes are given in a masterly manner. Four kinds of hæmatogenous infective inflammations are described, and all are considered to probably be due to bacterial infection. "They are true croupous pneumonia, embolic septic (suppurative or gangrenous) pneumonia, embolic tuberculosis, and embolic syphilis." In regard to the significance of Friedländer's pneumonia micrococcus in true croupous pneumonia, Professor Ziegler writes: "The clinical course, the definite duration of the accompanying fever, and the occasional epidemic character of the disease, all point in this direction,"—viz., that croupous pneumonia is the symptom of a specific infective dis-

ease. The definition given of miliary tuberculosis leaves no doubt in the mind of the reader upon which side our author stands in reference to the etiology of this disease. He writes: "Miliary tuberculosis of the lung is set up when tubercle-bacilli enter the circulation in considerable numbers, and lodge in the pulmonary capillaries." At another place he says, "And though our view at present is that the essential and specific irritant in tuberculous phthisis is the tubercle-bacillus, yet it can hardly be gainsaid that in many cases other injurious agencies co-operate with it." The position of the tubercle-bacillus as the etiological factor in tuberculosis is, we believe, to-day an almost universally accepted fact; a few still remain unconvinced, but they are very few, and belong to the class of whom it has been said that there are none so blind as those who will not see.

The chapter upon the structure and functions of the brain and spinal cord is a most valuable one; indeed, we know of no work where so much information may be obtained with so little trouble, and, notwithstanding the obscurity which usually is found in the majority of books when treating of these subjects, Professor Ziegler has succeeded, in so far as our present knowledge has extended, in elucidating very satisfactorily everything bearing upon the anatomy and function of these parts.

Malformations of the brain and spinal cord are briefly, but very interestingly, described, explaining the origin of the various monstrosities, which are, fortunately, but seldom born. Under this chapter are included the different varieties of hydrocephalus and the anatomical conditions upon which they are dependent. In speaking of the significance of the various malformations of the brain, the author states that idiocy is frequently a result; but he further adds, "There is, however, no one variety of malformation which can be assigned as the anatomical basis of idiocy; there is, in other words, no special idiotic brain." This opinion is based upon the circumstance that while extensive alterations from great abnormalities do occasion idiocy, very slight changes may also determine similar symptoms; and, again, grave malformations have existed without giving during life any functional evidence of their presence. It would, therefore, seem that any attempt of neurologists to connect certain forms of idiocy with certain abnormalities is futile. In regard to Benedikt's assertion that in criminals certain peculiarities of the configuration of the cere-

bral surface were constantly met with, in which there was some resemblance to those of the lower animals, our author believes this hypothesis is not tenable, from the fact that anomalies similar to those described by Benedikt occur in persons who have never committed crime. It is also believed that anomalies and malformations of the brain found in insane and epileptic patients are none of them peculiar or pathognomonic of nervous or mental disease, inasmuch as they also are met with in persons whose mental functions are perfectly normal. It is, however, admitted that anomalies of brain-structure are more often seen in persons who exhibit mental defects than in those whose minds are normal.

The question as to the regeneration of nerve-elements of the brain and cord is answered in the negative, at least this is believed to be the case in men, and, therefore, when there occurs a restoration of function, after a destruction of ganglion-cells and nerve-tracts, "it is only by the substitution of equivalent centres and tracts capable of functionally replacing them."

The morbid change present in locomotor ataxia is, according to Professor Ziegler, essentially a degenerative one, and has nothing to do with inflammation. This view is in opposition to that held by most neurologists, who are inclined to consider the lesion a result of the inflammatory process. The etiology of this disease, whether depending upon some congenital or acquired weakness of the centripetal tracts, or upon malnutrition from disturbances of circulation, our author does not decide, since both, he thinks, may apparently be regarded as occasioning the affection. The opinion in reference to the exciting cause of tabes is also undecided, and its real nature thought to be unknown. That syphilis may be an important element in the genesis of the disease is mentioned, but other influences are also thought capable of giving origin to the affection. Having occasion some time since to review the testimony as to the relation between syphilis and locomotor ataxia, we concluded that while it did not supply positive and conclusive evidence of their etiological connection, it certainly led us to believe that there was something more than mere coincidence in the frequency with which the two diseases are associated, and although not quite prepared to accept the positive opinion of those who consider locomotor ataxia, with very few exceptions, due to syphilis, we thought we were justified in concluding that there

must be some not very indefinite etiological connection between these two diseases.

The fatal results of traumatic injuries of the brain are stated to be generally due to the supervention of purulent meningitis and encephalitis, and "it is only when the wound is aseptic or is at once protected from septic infection that we can expect healing without suppuration." The truth of this statement has been most admirably demonstrated during the past year by operative surgery, which has not hesitated to extend itself into the very centre of the brain for the removal of neoplasms, and in some cases without fatal results.

The almost generally accepted view of the location of cerebral tubercles in the adventitia of the arteries, and there forming clusters of cells derived by multiplication from the endothelium of the lymphatics, is believed by Professor Ziegler to be erroneous. The tubercle, according to him, is developed from extravasated leucocytes and proliferous connective-tissue cells; "the adventitia is affected and takes part in the proliferation only in a secondary way, and what has been described as a tubercle due to periarteritis of a pial vessel is, in fact, only a fraction of a tubercle growing near a vessel."

The genesis of gliomata is believed by our author to arise from the neuroglia cells, and a careful examination of specimens of these neoplasms has not convinced him that the view expressed by Klebs, of the active participation of the ganglion-cells in the production of gliomatous growths, is a correct one.

The process by which a divided nerve is regenerated, or the union of a severed nerve, is given as follows: The central end first shows a swelling of some of the axis-cylinders, which is followed by a subdivision of each into from two to five new axis-cylinders; these latter grow in length, and form within the old sheath of Schwann whole bundles of new nerve-fibres. Thus the extremity of the central end of the divided nerve consists at first of new-formed axis-cylinders surrounded by a protoplasmic nucleated sheath, which receives a homogeneous envelope of connective tissue formed from the protoplasmic sheath, between which and the axis-cylinder grows a medullary sheath. This re-formed and growing nerve enters the soft mass of granulations and cicatricial tissue that intervenes between the severed ends. When it reaches the peripheral end, some of whose fibres have meanwhile perished, certain of the

new fibres enter the empty primitive sheaths, but the greater number penetrate the epineurium and perineurium and advance towards the peripheral end organs. It is thus seen that Professor Ziegler adopts the view of the new formation of nerve-fibres from the central end of the old nerve, and that the essential part of the process is the subdivision of the axis-cylinder. He further adds, "The hypothesis that nerve-fibres may grow from granulation-cells or from connective-tissue cells of the perineurium, endoneurium, or epineurium is contrary to all histogenetic analogy." At present the information we possess in regard to this subject is not definite enough to form any positive conclusion, but it would seem that a correct view is possibly to be found in admitting more than one element in the nerve formation, and while we are inclined to regard the axis-cylinder as one, we cannot but believe that the nerve-corpuscles or nuclei on the sides of the sheath of Schwann may also be another element in the regenerative process.

To conclude our notice of Professor Ziegler's and Dr. MacAlister's work,—for to the latter much of the success of the book must be attributed, since his translation could not well be improved, and his additions are such as to give the work an international character, representing the views of both German and English pathologists. We wish to speak of the entire work, and we believe it to be without any exception one of the best treatises for study, for information, and for reference that is at the command of the English-reading profession. The very extensive bibliography which is attached to each article is of itself an invaluable feature of the book; indeed, all the work of the authors is done well. We regret that we cannot say the same of the publisher's work.

In a book treating of pathological histology the illustrations are most important, and should be done in as perfect a manner as possible, since much of the text is a description of the drawings, and much of the student's pathological work is a comparison of his prepared sections of diseased tissues with drawings in works on pathological anatomy. The illustrations in the above volume are bad, indeed, very bad, and no excuse can be made for putting such poor work in the book, since the German and English publications from which they are copied are in every way far superior and suitable to accompany the very able text.

J. H. C. S.

A COMPANION TO THE UNITED STATES PHARMACOPEIA. By Oscar Oldberg, Pharm.D., and Otto A. Wall, M.D., Ph.G. Second Edition.
New York: William Wood & Co., 1887.

As this is the second edition of a well-known book, it does not require at the hands of the THERAPEUTIC GAZETTE any elaborate review, since the well-posted readers of this journal are already familiar with the scope and aims of the book. We are principally interested to know whether this edition has been fully revised, as is claimed on its title-page.

According to the preface, the Companion treats of drugs and medicine used to a considerable extent in the practice of medicine, without reference to their supposed force or want of force. Led by this, we have looked for the articles upon antipyrin and antifebrin,—remedies which are not only used to a considerable extent in current practice but are of very real value, and indeed have taken a first rank among the medical remedies. To our surprise, we have been unable to find either in the body of the work or in the index of it any reference to these remedies. Antipyrin has now been before the profession for four years, and tons of it have probably been administered. *Ex uno omnes discite.*

DRUG ERUPTIONS. By Prince A. Morrow, M.D.
New York: William Wood & Co., 1887.

This book of nearly two hundred pages is a clear, well-written description of the various skin eruptions and inflammations commonly and uncommonly produced by various substances used for medical purposes. It appears to be based not only upon considerable clinical experience, but, what is much more important, a very thorough study of French, English, and German literature. In such a subject the *rara aves* which take their flight before any one man cannot be very numerous, and the study of the records of the world's experience is essential. We note here, as we note almost everywhere, that the world's records mean experience of English-, French-, and German-writing peoples; Spanish and Italian languages seem an insuperable barrier. So far as the Spanish is concerned this is not an important loss, but Italian medicine is rapidly growing in importance.

The value of the present book is especially as a work of reference. Hereafter when some unexpected superficial explosion astonishes the practitioner, he can fly to the present volume with the comforting assurance of relief.

Correspondence.

PARIS.

(From our Special Correspondent.)

The medical and the pharmaceutical professions here are much occupied at present with *hypodermic medication*. As physicians expect great results from the new mode of treating disease, pharmacists are called upon to supply the necessary armaments, and some disinterested persons, as usual, take advantage of the occasion to advertise their products. As regards *quinine*, the question appears to be settled, for the time being at least, in favor of the *hydrochlorate*. At the last meeting of the Paris Society of Pharmacy (April 6) the merits of the rival claimants, the sulphovinate and the lactate, were discussed and summarily disposed of. The *sulphovinate* has the disadvantage of decomposing when kept, and thereby becoming apt to cause abscesses when injected; the *lactate* of being but little soluble when crystallized, so that the solutions have to be made extemporaneously from freshly-precipitated quinine and lactic acid, with some precautions to insure the percentage of active principle. On the contrary, the hydrochlorate is a stable compound, sufficiently soluble, and easily procured from dealers in well-defined crystals, much less liable to adulteration than the ordinary medicinal sulphate. The reason of this comparative purity may be that the sulphate is an old acquaintance of the dealers, in fact, too familiar to them, while the hydrochlorate is a new-comer. But it is unnecessary to borrow trouble; suffice it to say for the present that this salt appears to be the most eligible quinine compound for hypodermic uses, and that it is, in the actual state of science, found in commerce unadulterated with other cinchona alkaloids.

The *petroleum derivatives*, on the other hand, if not active ingredients in the hypodermic medication, still belong to the same system of therapeutics as vehicles for various substances that cannot be conveniently dissolved or suspended in water. But here chaos reigns supreme. Not that formulas and arguments are lacking, for there are floods of them, only practical experience is necessary to establish the value of the products so loudly recommended. Pecuniary interests, it is said, are at stake somewhere. The American and the Russian petroleums are competing for favor; according to some writers the preference should be given to a liquid obtained by exhausting *white vaseline* with ether

at 14° Fahrenheit and distilling off the menstruum. Others appear satisfied with American heavy oils of proper quality, and, again, others condemn American petroleums altogether, and will have none but the Russian or Baku products. It is impossible now to say how far such opinions are justified, but it cannot be denied that some forms of petroleum present great advantages for dissolving or suspending medicines to be administered hypodermically. Before ending the chapter of oily vehicles, however, it is well to say a word of *peanut oil*, which, at least, is subject to no patent right or corporate monopoly. Dr. J. Ley has found this oil equal to the petroleum products in respect to blandness, and superior as a solvent of essential oils, iodoform, and carbolic acid. To purify peanut oil, or to *sterilize* it, as Dr. Ley says, all that is necessary is to bleach it in the sunlight, and to filter it through perfectly neutral bone-black.

The *contamination of water by lead pipes* is one of those topics which always command attention and seem never to receive a satisfactory solution. The reason is that the purity of drinking-water is of too much importance to ever be lost sight of, while the apparently unavoidable use of a poisonous metal for its distribution is a constant source of doubt and suspicion. Not long since a sort of panic occurred in some quarters of Paris because the water department had spoken of incasing with sheet lead the internal conduit of the Arcueil Aqueduct. During the last winter and spring several leaks became apparent in this structure, which, although still new, never was substantial enough. At one time it was even feared the whole thing might fall to pieces, and the remedy proposed by the engineers was to use sheet lead as an inside casing. As the Arcueil Aqueduct supplies one good third of the city, the southern portion, with water from the Vanne River, the purest to be had in Paris, protests many and loud were uttered against the project. The subject has been referred to the *Conseil d'Hygiène*, corresponding to the Board of Health, who will report after due analysis, for it is only a chemical question, since lead conduits may be either dangerous or harmless according to the composition of the water coming into contact with them. Another interesting case was recently related before the Royal Society of Medical and Natural Sciences of Brussels by M. Vande Vyvere, the genial Secretary of the International Pharmaceutical Council, who was so kindly

appreciated by all the pharmacists present at the Brussels International Congress of 1885.

The owner of a house recently went to see him in regard to a lead pipe which had been used only two years for leading water from a well to a pump placed in the dwelling in question. The pipe was all corroded, and the landlord attributing this fact to the bad quality of the metal, wanted to compel the plumber to replace the pipe at his own expense. The plumber vehemently objected,—Brussels and Paris plumbers are not very different from their Philadelphia or New York congeners,—declaring that his lead was of the very best quality, and that the well water was at fault. To prove his side of the case the landlord exhibited a certificate delivered by an analyst who had been called upon a few months before, because the tenants had complained of frequent attacks of colic. The certificate, a model of its kind, is so peculiar that M. Vande Vyvere took a copy of it. It ran as follows: "The water analyzed is clear, limpid, and odorless; it is slightly calcareous; contains no organic matters. This water contains some chlorides."

Notwithstanding so convincing a document, M. Vande Vyvere told the landlord some further investigation was necessary, as the location of the well was not such as to afford a presumption of purity, but just the contrary. Accordingly, the next day, in a visit to the well, a specimen of the water was taken for analysis, and the whole lead pipe removed for examination. The metal was found all indented with small holes, and in some parts the pump-gear so corroded as to resemble a sponge. A whitish coating covered the inside, which, on being removed with a camel's-hair brush, was found to consist of carbonate of lime and carbonate of lead, but chiefly lead.

The analysis of the water was performed on a little more than a gallon of the liquid (four litres). It is unnecessary to relate all the particulars, but the important features are that the water was found to be deficient in dissolved oxygen, contaminated with a considerable proportion of organic matters of animal origin and ammoniacal salts; and what is most singular, with such a quantity of nitrates as to be detected by reagents without previous concentration. On the other hand, lime compounds were in very small proportion, something unusual in Brussels, where hardness is the chief defect of well waters. This hardness, it is true, protects the lead pipes from corrosion, while the presence of nitrates and ammoniacal salts causes the

metal to be rapidly attacked. Hence the well water was at fault, and the colics experienced by the tenants were evidently of saturnine origin. The well was immediately condemned for drinking or cooking purposes. So, for once at least, the plumber was right; but it must be borne in mind this occurred in Brussels.

More or less obscurity has so far surrounded the actual toxic and therapeutical properties of *colchicine*, not to speak of its chemical affinities. A suspected case of poisoning by the alkaloid, which lately occurred in Paris, and in which both chemists and physiologists were obliged to confess their lack of information, has called the attention of scientists to a new and necessary study. Messrs. Mâret and Combemale, among others, having undertaken to supply the deficiency, have published the following results of their experiments. When administered in *toxic* doses to dogs and cats (1) *colchicine* operates as an irritant poison, acting indifferently upon all organs, but still predominantly on the digestive tube and the kidneys; (2) its minimum toxic dose for dogs and cats is smaller when administered hypodermically than by the stomach. In the first case 0.000571 gramme and 0.00125 in the second, to each kilogramme weight of body, are enough to cause death; (3) the hypodermic action is also more speedy than the stomachal; (4) it is eliminated by various excretories, chiefly the kidneys, but the elimination is slow, so that doses otherwise insufficient to cause death, and comparatively small,—0.00016 gramme to the kilogramme of body-weight,—may, when repeated, cause death within five days; (5) *colchicine* occasions congestions of the articular extremities and bony medulla.

The foregoing experiments were performed upon five dogs and two cats. To investigate the *therapeutic* effects of *colchicine*, eight men, two of them arthritic, three dogs, and one cat were experimented with. The following are the conclusions of the writers: When administered in therapeutic doses (1) *colchicine* acts, according to the dose, either as a diuretic or as a purgative, and does so owing to a congesting and irritant action upon the kidneys and the digestive tube; (2) the effects are the same whether the substance is ingested hypodermically or by the stomach, but they are more speedy and require smaller doses in the first instance than in the second. Man is three times more sensible to the effects of *colchicine* than dogs and cats are, as the

total diuretic dose for him may be fixed at 2 or 3 milligrammes, and the cathartic at 5 milligrammes; (3) colchicine increases the excretion of uric acid, and produces, on articular surfaces and bone medulla, congestions giving rise to two sorts of effects that it is of some interest to compare with the purgative effects to account for the mechanism of the alkaloid's action in certain diseases, gout especially. Colchicine decreases the quantity of the uric acid contained in the blood, and produces a substituted irritation on a level with the articular surfaces. But its tendency to accumulate in the economy, and its great toxic power, render great caution in its employment necessary.

On the other hand, chemists have so far supplied no characteristic test for identifying colchicine.

In no way, perhaps, do medical ethics and jurisprudence differ so much in different countries as in regard to *professional secrets*. To speak only of the United States, in some parts the medical secret is scarcely recognized by law, while it is nowhere enforced. In France a very different jurisprudence prevails, for the law edicts a penalty of from one to six months' imprisonment, with a fine not exceeding five hundred francs (one hundred dollars) against all physicians, surgeons, pharmacists, and midwives guilty of divulging the secrets that have come to their knowledge in their professional capacity. And the law is not a dead letter, for it never was applied more strictly than it has been recently. Less than two years ago, Dr. Watelet, after the death of M. Bastien Lepage, the celebrated artist, whom he had attended, felt offended at a criticism published in a Paris paper. To vindicate himself he wrote a letter to the *Matin* newspaper, detailing at some length the disease, treatment, and cause of death. But for so doing he was, without any intervention of the Lepage family, prosecuted by the district attorney (*Procureur de la République*) and summoned before the Correctional Tribunal, together with the publisher of the *Matin*. The court would not admit good faith or the lack of evil intent as sufficient excuse, but only as a mitigation of the offence, and sentenced the doctor to one hundred and the publisher to sixteen francs' fine. Both appealed, and a few months later the sentence was confirmed by the Court of Appeals. Of course, in all such cases the fine itself is of slight consequence, but the costs are considerable. Another case, which occurred in February last, is no less interesting because it shows the rule works both ways. It was as fol-

lows: D., a resident of Besançon, had insured his life for five thousand francs (one thousand dollars). After his death the heirs applied to Dr. X., the deceased's physician, for the requisite certificate enabling them to collect the insurance money. Said certificate, according to a clause of the policy, is to indicate the nature and duration of the disease which caused the death. X. refused to do anything of the sort. Perhaps he had in mind the fate of his Paris professional brother, perhaps he had some other reason. By the way, it may be remarked that French physicians are not quite agreed as to their duties in respect to the death certificates of persons insured by companies. Some doctors think they may divulge the nature of the disease when it is not of a hereditary or disgraceful character. Others, and with them Dr. Brouardel, are of opinion that the family physician must in all cases remain silent. For if in some cases he should consent to give certificates, and refuse in others, his refusal would become equivalent to the very worst certificate. By such a course he might expose the memory of his patient and the soundness of his offspring to most injurious suspicion.

However it may be, our Besançon physician stoutly refused to give the certificate as requested. Thereupon the heirs began a civil action against him and the insurance company, including both as co-defendants, so as to obtain the money either with or without the certificate. Before the court the doctor's plea was the penal statute enjoining professional secrecy; that of the company, the policy clause providing for the production of a death certificate. The court accepted the doctor's defence, exonerating him, free of all costs, and ordered the company to pay the full amount demanded, together with all the expenses and costs of the lawsuit.

BERLIN.

(From our Special Correspondent.)

Although during the last few weeks the whole population of Germany was interested in the preparation for and the celebration of the emperor's ninetieth birthday, yet a few scientific men were interested in a subject quite different. The "art of starvation" was practised by a Norwegian named Cetti, who finished a fast of eleven days on the 22d of March. It may be an occasion for astonishment that such a fast is considered worthy of notice. America possesses a Dr. Tanner who

fasted for a much longer period, and many others, equally foolish, have followed his example. This Cetti, however, fasted for the cause of science, and no less a person than Virchow tendered him his thanks in the name of science before the whole medical association of Berlin when he read the notes which he had taken of the case, and stated the benefits which he believed might follow such a course of prolonged abstinence. It happened as follows: Cetti had intended to give an exhibition to demonstrate his "hunger-cure." He probably considered it expedient to solicit the notice of well-known men in order to give his experiment more of a show of being a scientific investigation. In a most remarkable degree he was enabled not only to attract the notice of able men, but they watched over and controlled his "hunger-cure."

If it had been possible to conduct the investigation in a physiological laboratory perhaps no objection would have been made, but as the whole machinery of the affair was to be made public, the police forbade the exhibition. Cetti starved, nevertheless, but entirely for the benefit of science, and not less than five learned men and a staff of fifty young physicians watched him, day and night, took the weight of his body, measured the sensible and insensible loss, controlled the loss of volume, examined his blood, used the dynamometer in examination of his strength, and examined his urine. The man was exhibited by Professor Senator, who was at the head of the committee of observation, on the 23d of March before the Medical Society: there was, naturally enough, very little that was noticeable about him. The results of the observations will not be made public for some weeks. The full importance for clinical purposes of these observations will be noticed later when we have full particulars.

The therapeutic field of German medicine has been greatly stirred of late, and as the agitation has undoubtedly excited interest in America, the writer will give it extended notice in the present letter. The question of the hour is the treatment of fevers, chief among which is abdominal typhus.

In the last few years we have had a high tide and flood of antipyretic remedies, each of which has brought its own recommendations, and there have been many authors who have thrown down the gauntlet in favor of the use of one or the other of the so-called antipyretics in diseases caused by infection. But after careful examination not one of these remedies, in a strict sense of the word, has

been able to cope with typhoid fever, at least in the sense in which quinine controls malarial fever, supposing malarial fever to be controlled when its principal symptoms are suppressed. In the last few weeks the question has been much discussed whether the cure for fever lies in the antipyretics now used in medicine.

Brand, the first of his time who practised the cold-water treatment of typhoid fever, in an extended article, which is being published in the *Deutsche Medicinische Wochenschrift*, raises his voice in favor of the method inaugurated by him and against antipyretics. Other authors, among whom we will mention only Ebstein, Senator, Gläser, have given testimony in favor of the "expectant methods," and Leyden, Fraentzel, and others favor their view. The matter will be critically studied, and doubtless such investigation will lead to the abandonment of many of the antipyretic methods now in vogue.

With the progress of study in bacteriology has arisen the question, which has received much attention during the last few years, as to whether an abortive treatment, in diseases caused by infection, is possible; and in this connection Schörlein, and later Liebermeister and others, have recommended naphthalin, as well as calomel, for their disinfecting properties when introduced into the large intestine, in the abortive treatment of infection. The thorough study of these drugs and their action cannot fail to be a progressive step, even if it should lead to their abandonment. In this connection we quote from the results given by Professor Fürbringer, of the department of internal medicine at the hospital called the "Friedrichshain," on March 7. He compared twenty-five cases of typhoid fever treated with naphthalin to a like number treated expectantly, in regard to the duration of the disease, the mortality, and complications; the results were unfavorable to the use of naphthalin. An entirely new method of examination was followed, which consisted chiefly in the investigation of the dejecta for bacteria.

Fürbringer examined the stools of those patients treated with naphthalin as well as the stools of patients treated by the expectant method. The results when calculated showed in round numbers per average, in a milligramme of feces from a patient suffering from typhoid fever who was not treated by naphthalin, one hundred and twelve thousand bacteria; in the stools of a patient who was given naphthalin, ninety thousand bac-

teria; in both instances the schistomycetes, bacteria capable of abundant increase, were present. In this result there is, it is true, a slight advantage in favor of naphthalin, but there was not a trace of disinfectant effect produced upon the stools of a typhus patient when colonies of typhoid bacilli have been found in cultures made from stools of those who took naphthalin, and when in addition even a multiplication of micro-organisms greater than that in typhus abdominalis was observed in naphthalin stools. An analogous investigation on the use of calomel produced quite the same results. If, however, as is claimed, calomel has an incontestable effect upon certain cases of typhoid fever, we may expect some results upon the typhoid bacilli from its use. For a detailed discussion upon this subject we must refer the reader to the original lecture in the *Deutsche Medizinische Wochenschrift*.

Under the direction of Professor Fürbringer the diuretic effect of calomel in diseases of the heart, which has been so highly extolled by Jendrassik, has been investigated at the Friedrichshain hospital. The results corroborated the assertions of Jendrassik in the cases which were so treated. Leyden has also made a study of the diuretic effects of calomel. In those cases of hepatic cirrhosis with ascites he obtained no result in one; in a second some relief followed its use; in the third a distinct and lasting result was obtained. In diseases of the heart, with diminished diuresis and dropsy, Leyden considers calomel to be a decidedly valuable remedy, which, although not invariably certain, in many cases has a decided diuretic effect.

The writer closes the present letter with a reference to the widespread interest now existing in Berlin over the study of myxœdema. A few weeks ago, on his return from a journey to England, Virchow gave the Medical Society of Berlin a minute account of the recent investigation, especially Horsley's, of this disease, which, until now, has been comparatively unknown. Cases of myxœdema have been recently reported from all quarters of Germany, which had been previously overlooked from ignorance of its symptoms.

The general inquiry and interest awakened in England regarding this disease cannot be disregarded from the stand-point of German medicine.

BERLIN, March 24, 1887.

ANTIPYRIN AS AN ANTIPYRETIC.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—I have read from time to time different experimenters' researches in regard to the new remedy antipyrin, and have been pleased and benefited as well. I think the drug is destined to fill an all-important place in the physician's armamentarium. Even with the little experience I have had with the drug I would not do without it. Of its antipyretic action there can be no doubt, and in any case of a sthenic nature its action is excellent.

On December 13, 1886, I delivered a woman of a large male child. The woman was a primipara and 27 years old. On the third day after delivery had a temperature of 102° F., and, notwithstanding I used the usual treatment indicated under such circumstances, the temperature on the sixth day after the birth of the child was 106° F. There was pelvic and diffused peritonitis. I became fearful for the safety of my patient, and resolved to try antipyrin, which I prescribed in 15-grain doses, dissolved in cinnamon-water q.s., every four hours. After the third dose the temperature was down to normal, and no bad after-effects, such as chilliness and nausea, were observed. The intermission lasted twelve hours. In the intermission I gave quinine and salicylic acid. The following day the temperature came up again to 103° F. I again used the antipyrin in 8-grain doses every three hours. After the third dose the patient was sweating profusely, and the temperature receded to half a degree below normal; gave stimulants and other necessary treatment; put woman on proper management, and she got well promptly.

I treated another case in January of the same kind with the same results.

I have used antipyrin in four cases of malarial fever where I thought it indicated, and with the happiest results. It is good in high temperature of the exanthemata, especially where in measles you have an alarming temperature. You can soon reduce it with safety by the use of this drug. A convenient formula for these cases in children is—

R Antipyrin, ℥ii¼;
Aq. cinnamon., ℥ii. M.

Sig.—One teaspoonful every two hours as needed to control fevers.

There is no doubt of the utility of antipyrin in many cases of hemicrania. Usually one dose of from 10 to 15 grains will suffice to relieve an attack. I have had excellent

success in treating headaches of the ordinary types by prescribing caffeine citrate in 1- to 2-grain doses, and if three or four doses of that do not relieve, then resort to the antipyrin.

My experience with the drug, though quite limited, has been very flattering as to the utility of what promises to be one of the great therapeutic discoveries of this age.

Yours,

J. Z. SCOTT, M.D.

SCANDIA, KANSAS, April 12, 1887.

ABORTION FOLLOWING THE USE OF POTASSIUM PERMANGANATE.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—I saw in your last issue of the THERAPEUTIC GAZETTE an article entitled "Abortion following the Use of Permanganate of Potassium." I have a similar case I wish you would publish in the next issue. Last July a colored woman applied to me for treatment, and stated that her menstrual periods had never been regular before marriage, and during the three years she had been married she had gone three months at a time without menstruating. At the time she applied to me it had been one year since she menstruated the last time, but during that time her general health had been very much depreciated. I at first gave her tonics, thinking, perhaps, by building up her general health it would set things aright. After keeping her on the tonics for some time, I found she derived no benefit from the treatment as regards the menstrual periods, although her general health was greatly improved. I then put her on permanganate of potassium, 2 grains three times a day (having no idea that she was pregnant). After she had been taking it a few days I was summoned to see her, and upon my arrival I found that she had aborted, and the foetus looked to be about two months old.

Notwithstanding some good authorities say that the permanganate does not have any influence upon the gravid uterus, yet I believe it caused abortion in this case.

Very respectfully,

J. J. MANN, M.D.

NASHVILLE, N. C.

Notes and Queries.

NETTLE JUICE.

Les Nouveaux Remèdes states that the best remedy for hemorrhages of all kinds is nettle

juice. It is better than tannin, chloride of iron, sulphuric acid, hydrochloric acid, or ergot. The illustrious Chomel said, "This remedy is the most certain to stop hæmoptysis and all hemorrhages."

The difficulty heretofore has been that the remedy was not available, because it will not keep. However, a pharmacist, M. Peneau, has conceived the happy idea of preparing a syrup from the juice. This is done at a time when the plant is in full vigor. In this form the medicine does not alter, and keeps indefinitely.—*National Druggist*, April 22, 1887.

FORMULÆ FOR LANOLIN OINTMENTS.

WULFSBERG, of Christiania, gives the following formulæ in the *Therapeutische Monatshefte* for March, 1887:

R Lanolini, $\text{ʒiij}\frac{3}{4}$;
Cetacei,
Olei amygdalarum, aa ʒiv ;
Olei bergamot., gtt. v;
Olei lavand., gtt. xv. M.
F. unguentum.

This may be used as a pomade.

R Ung. picis liquid., ʒiv ;
Lanolini, $\text{ʒxi}\frac{1}{4}$. M.
F. unguentum.

This was used with good results in a case of chronic eczema, which was caused by exposure in the tropics and had resisted other remedies.

A ten per cent. ergotin and lanolin ointment was found excellent in the treatment of hemorrhoids.

A ten per cent. mixture of ung. cinereum and lanolin, again mixed with lanolin as a diluent in the proportion of one in twenty, was very successfully used in cases of pediculi pubis, and also to promote the absorption of infiltration, as in the case of scars and infiltrates occurring in the course of the healing of wounds.

RELATIONSHIP BETWEEN HYDRASTINE AND NARCOTINE.

M. FREUND and W. WILL have obtained very interesting and important results during a study of the chemical nature of hydrastine from *Hydrastis canadensis*.

Perrins discovered hydrastine (which occurs alongside of berberine) in the mother-liquid left after the separation of berberine by means of dilute acids. The mother-liquid

is cautiously neutralized with ammonia until a permanent precipitate of a dark-colored resin forms, which does not redissolve on stirring. The liquid is then filtered, and ammonia added to the filtrate, when a yellowish-brown precipitate separates, which is several times recrystallized from alcohol, and then constitutes hydrastine, forming colorless, shining prisms.

Shortly afterwards the base was examined by Mahla, who assigned to it the formula $C_{22}H_{23}NO_6$.

Freund and Will have met with difficulties in the preparation of hydrastine. The above-mentioned yellowish-brown precipitate is produced in copious quantity, but it is difficult to recrystallize; nor could the authors obtain a yield of one and a half per cent. from the root, as stated by Perrins. For this reason they preferred to extract the finely-powdered root with ether. The residue left on evaporation of the latter is dissolved in hot alcohol, and the filtrate allowed to cool, when crystals of nearly pure hydrastine separate. The base is remarkable on account of the ease with which it crystallizes. It forms crystals belonging to the rhombic system, melts near 132° C. (269.6° F.), and is lævogyre in chloroformic solution, but dextrogyre in aqueous solution made with the aid of hydrochloric acid.

When hydrastine is oxidized either with permanganate of potassium or with nitric acid it is partly converted into *opianic acid*, identified by ultimate composition, melting-point, and all other properties. The oxidation by permanganate is made as follows:

Five grammes of hydrastine are dissolved in an excess of hydrochloric acid, the solution diluted to about two litres, and gradually mixed with a cold solution of ten grammes of permanganate of potassium in two litres of water. The mixture is then rendered faintly alkaline with sodium carbonate, filtered, and strongly concentrated. On supersaturating with diluted sulphuric acid a substance is deposited which is removed by filtration. The filtrate is diluted with ether, and the residue of the ethereal solution, together with the substance remaining on the filter, recrystallized from boiling water, being at the same time treated with animal charcoal. The colorless needles thus obtained correspond to the composition $C_{16}H_{11}O_6$, and are *opianic acid*.

With nitric acid the following process was adopted by the authors, as they wished to ascertain what nitrogenized by-products were formed during the reaction.

Ten grammes of hydrastine were cautiously

warmed with fifty cubic centimetres of nitric acid (spec. grav. 1.300) and twenty-five cubic centimetres of water to 50° to 60° C.—(122 – 140° F.), and kept at this temperature until a small portion tested with ammonia ceased to produce a precipitate. Care must be taken to avoid any considerable evolution of carbonic acid. After standing some time, the cold solution deposits a large amount of colorless crystals, which are *opianic acid*. On supersaturating the filtrate with very concentrated potassa solution, a white, voluminous precipitate is produced, which soon becomes crystalline. After being dried and recrystallized from benzol or acetic ether, crystals of a new base are obtained, which has been analyzed, but needs further study.

Since *opianic acid* is thus one of the decomposition products of *hydrastine*, and the same is obtained from *narcotine*, a very close relationship of these two alkaloids, one from *hydrastis*, the other from *opium*, must be suspected. It is true that the basic portion of the decomposition of *narcotine*, viz., *cotarnine*, is not identical with the base above described, yet it is so very similar that (as the authors say) it would be taken for *cotarnine* were it not for the analytical results.

The relationship of hydrastine to *narcotine* is, however, further demonstrated by their behavior towards potassa. If powdered hydrastine is introduced into a concentrated watery solution of potassa, and heat is cautiously applied, after the water has evaporated the hydrastine melts to a viscid mass. On removing the latter mechanically it becomes hard on cooling, and is then easily soluble in water. When the aqueous solution is neutralized by a diluted acid, unaltered hydrastine separates again. The same has been observed by Wöhler to occur in the case of *narcotine*. Another remarkable coincidence is that both alkaloids deviate the ray of polarized light to the left in chloroformic solution, but to the right in an acid aqueous solution.

If the residues left after the separation of berberine and hydrastine are strongly concentrated, acidulated with sulphuric acid, and the filtrate shaken with ether, large crystals of a faint yellow color will be obtained on evaporation. This substance may be obtained more easily by shaking the liquid extract of the root with ether before the removal of the berberine and hydrastine. On analysis this substance proved to be free from nitrogen and neutral, and therefore not identical with the other alkaloids supposed to exist in *hydrastis*. So far it appears to be a substance

partaking of the properties of lactones.—*American Druggist*, March, 1887.

A HEROIC METHOD OF PRODUCING EMESIS.

We have received from a Boston correspondent a letter from which the following extract is taken :

"I have never yet seen in any work on materia medica, therapeutics, or toxicology the following method of emptying the stomach in cases of opium-poisoning. I have found it rapid and effective in two cases. It is entirely mechanical, but acts in a very short time. Four to six ounces of sodii bicarb. stirred well into a goblet of water and swallowed. In a few moments follow it by a goblet of good vinegar. The result is that a perfect fountain of the mixture, with the contents of the stomach also, flies out of the mouth into the basin. I first heard of it from Dr. Henry G. Clark, of this city."

[We think that this method of causing emesis has not been widely practised in the profession. It is certainly very heroic, and to one who has never seen the play of this human geyser somewhat appalling. Probably in a strong, vigorous patient the plan would not be able either to produce fatal strangulation or rupture of the stomach.—EDS.]

PHYSICAL AND CHEMICAL PROPERTIES OF ANTIPYRIN.

PROFESSOR V. A. TIKHOMIROFF, of Moscow, says (*Proceedings of the Moscow Physico-Medical Society*, Nos. 5 and 6, 1886) that a pure preparation of antipyrin is rapidly and completely dissolved in water, the solution having a neutral reaction. The most characteristic reaction of the drug is that a very weak, slightly yellowish solution of perchloride of iron becomes dark reddish brown in color when a small quantity of antipyrin is added to it. On the subsequent addition of a drop of sulphuric acid the mixture becomes completely discolored. Another characteristic property of the drug is that on mixing a watery solution of it with an excess of nitrous acid (or rather with a mixture of KNO₃ and HCl), a green precipitate, bearing the name of "iso-nitroso-antipyrin," appears, and forms spherical masses, which, as seen under the microscope, closely resemble colonies of yeast-fungi (*saccharo-mycetes cerevisiæ*). This appearance is produced by the aggregation of

extremely minute crystals having a double refraction. The precipitate is soluble in caustic alkalies and ammonia, the solution being of a greenish-yellow color.—*Brit. Med. Journ.*, February 26, 1887.

REACTIONS FOR DUBOISINE, HYOSCYAMINE, AND ATROPINE.

We take the following from *Rundschau* (Prag): The reagent employed is a five per cent. solution of corrosive sublimate, using fifty per cent. alcohol as solvent. Two cubic centimetres of this solution, with one milligramme atropine dissolved in one to two drops of water, by immersion in a hot water-bath, give a reddish-blue precipitate.

With pure crystallized *hyoscyamine* treated in the same manner a clear solution results, which becomes slightly opalescent upon heating for a time in a water-bath.

With pure crystallized *duboisine* under same conditions a white cloudiness and white precipitate occurs when heated.

With amorphous (syrupy) *duboisine* a dense white cloudiness is produced, turning canary-yellow when heated.

With *hyoscine*, isomeric base with *hyoscyamine* and *atropine*, the solution remains clear like water, and does not change when immersed in a water-bath for a considerable time.—*National Druggist*, March 4, 1887.

FATAL RESULT OF INTRA-UTERINE MEDICATION.

DR. OTTO ENGSTRÖM, of Helsingfors, relates the following case in a Swedish medical journal. A woman, aged 37, had suffered from persistent metrorrhagia. The uterus was retroflexed, but no signs of past or present inflammation could be discovered. It was replaced and scraped out with a Simon's sharp spoon, two small spoonfuls of hyperplastic tissue being removed. A solution of iodine in iodide of potassium at 45° C. was then injected, the relative proportions of iodine, iodide of potassium, and water being 1, 2, 30. No fever and scarcely any pain followed. In five days' time a second injection was used, the temperature being 40° C., and the relative proportions of iodine, iodide of potassium, and water 1, 2, 10. No pain was experienced, and the patient walked up- and down-stairs. On the evening of the second day, however, a rigor came on, followed by pyrexia, abdominal tenderness, diarrhoea, and

convulsions, death occurring two days later. At the necropsy there were found bronchopneumonia, chronic œdema of the lungs, endocarditis, and purulent peritonitis. The substance of the uterus was soft, friable, and gray-colored, containing specks of blood and lymph. The peritoneum over the uterus was of a yellowish-red color and covered with puriform matter. The Fallopian tubes and their fimbriated extremities were not dilated or particularly reddened, and the mucous membrane presented no abnormality. The os uteri was too small to admit a fine probe. A large quantity of pus occupied the peritoneal cavity. Dr. Engström does not think any of the injection can have passed into the tubes, still less into the peritoneal cavity, and believes that the fatal peritonitis was due to an extension of the inflammation directly from the uterine wall to the peritoneum.—*Lancet*, April 16, 1887.

MELON-ROOT AS A SUBSTITUTE FOR IPECAC.

The *Journal de Pharmacie* says that Torosicvitz obtained the emetic principle of melon-root by treating the aqueous extract with alcohol. He calls it melon emetine.

Properties: Brownish hard mass with shining fracture, very deliquescent; its aqueous solution has a slightly sharp, bitter taste; it is indifferent to acids and alkalies; it colors ether. Alcohol dissolves it instantly, and it is precipitated by acetate of lead and by infusion of nut-gall. Solution of ammonia or potassium dissolves it readily.

Maximum dose of melon-root powder, 25 grammes. Dose of melon emetine, 9 centigrammes. This produces vomiting.

The cultivated plants were used for these experiments. The wild plants are much more active.—*National Druggist*, April 27, 1887.

USE OF SOME NEW REMEDIES.

Osmic acid—best administered in pill form (made up with Armenian bole). The dose is $\frac{1}{80}$ grain, which may be repeated several times a day. Used in epilepsy and sciatica. Agaricine—best administered in combination with Dover's powder. Dose $\frac{1}{2}$ to $\frac{1}{4}$ grain. Used for night-sweats. Aloin—from $\frac{1}{4}$ of a grain to $3\frac{1}{2}$ grains in pill form. Antipyrin—dose from 75 to 90 grains, divided into three portions, one of which is to be taken every hour. Bismuth salicylate—dose 5 to 7 grains, in pill

form. In typhoid this dose may be doubled and repeated every hour up to ten or twelve times. Cannabinon—from $\frac{2}{3}$ to $1\frac{1}{2}$ grains. Best administered mixed with finely-ground coffee. Sedative and hypnotic. Colocynthin—used subcutaneously. The dose is from $\frac{1}{4}$ to $\frac{1}{2}$ grain. It may also be administered in pill form by the mouth, the requisite dose being from $\frac{1}{4}$ to 1 grain. Convallaramine—internally, in pill form. The dose is from $\frac{1}{4}$ to $1\frac{1}{2}$ grains. Euonymin—best given in pill form, combined with extract of belladonna or hyoscyamus. The dose is from 3 to 10 grains. Nitro-glycerin is best given in alcoholic solution. The dose is from $\frac{1}{100}$ to $\frac{1}{80}$ grain, repeated several times a day. Rosbach prefers ether as a solvent. His formula for its use is as follows: Dissolve $1\frac{1}{2}$ grains of nitro-glycerin in sufficient ether, and add the solution to a mixture consisting of 2 ounces of powdered chocolate and 1 ounce of powdered gum arabic. Mix very thoroughly and divide into 200 pastilles. Each pastille will thus contain $\frac{1}{80}$ grain of nitro-glycerin. Used in angina pectoris, and as a diuretic. Picrotoxin—in aqueous solution. Dose from $\frac{1}{4}$ to $\frac{1}{2}$ grain. Used in epilepsy. Sulphate of thallin may be given dissolved in wine or water (with some corrigent). The dose is from 4 to 8 grains, or 1 grain every hour.—*London Med. Record*, April 15, 1887.

MYRTOL.

Myrtol is obtained from the distillation of the leaves of the myrtle; it is a liquid possessing the characteristic perfume of the plant. It is of less density than water, evaporates at the ordinary temperature, stains paper, but the stains disappear entirely. It has a warm, slightly acrid taste, soon followed by a sensation of freshness. It is said to be an excellent disinfectant and an energetic antiseptic, to stimulate the digestive functions, and to increase the appetite. In moderate doses myrtol acts as a sedative to the nervous system. It is eliminated by the respiratory and urinary passages. Myrtol appears to have the advantage over the balsams of not upsetting the stomach, thereby enabling it to be employed for a long time without leading to objectionable effects,—e.g., dyspepsia. M. LINARIS has had globules of myrtol prepared, each containing fifteen centigrammes of the pure liquid. The remedy does not appear to cause the same effects at all periods of diseases of the respiratory passages. In order to obtain

the best results it should be employed with a view to combating subacute or chronic catarrhal affections, or it may be given at the termination of an acute attack of bronchitis when the fever has subsided. Another indication for its employment is an abundant opaque muco-purulent secretion. In these cases the secretion is diminished and rendered less purulent. M. Linaris has employed myrtol in chronic fetid bronchitis, catarrhal bronchitis, catarrhal asthma with paroxysmal attacks and palpitations, capillary bronchitis, and dilated bronchi. The average daily dose was six of the globules; they should be taken after meals,—two in the morning, two in the daytime, and two at eventide.—*Lancet*, March 26, 1887.

PHENOL-MERCURY.

A new mercurial preparation has been lately introduced which bears the name of phenol-mercury. It is given in pills containing 0.02 gramme, of which the dose is at first two, increased to six daily. Stomatitis is said to be only rarely produced by its administration. Phenol-mercury is prepared by mixing an aqueous solution of one hundred and thirty-two parts of phenol-potassium with one of two hundred and seventy-one parts of mercuric chloride, when a reddish-orange precipitate is thrown down. This is washed on a filter until the filtrate no longer gives a reddish color on the addition of potassium iodide. In drying the color becomes lighter, and the powder retains only a faint odor of phenol. The phenol-potassium mentioned above is made by mixing alcoholic solutions of ninety-four parts of crystalline carbolic acid and fifty-six parts of caustic potash, and evaporating to dryness. It is a hygroscopic compound and difficult to keep, and should therefore be freshly prepared when required.—*Provincial Medical Journal*, April 1, 1887.

SWEET SUMACH.

The fluid extract of the root-bark of the sweet sumach, *Rhus aromatica*, an Anacardiacea indigenous to the United States of North America, has lately been successfully employed in nocturnal enuresis of children. It acts as an excitant on the non-striped muscles of the bladder, the uterus, and of the inferior portion of the digestive canal, and beneficial effects have likewise been obtained from it in hemorrhage of the bladder, the uterus, and the rectum, as well as in atonic diarrhoea.

Dr. Unna recommends, from three years' experience, this extract in enuresis of children, for which it acts as a specific. He prescribes to infants and children, up to two years of age, 5-minim doses in the morning and at bedtime; to children from two to six years of age, 10 minims twice daily; and to older children 15 minims twice daily. He never observed any injurious concomitant effects, even after its uninterrupted use during several months. Its tonic effects, however, are not permanent, the paresis of the sphincter muscles of the bladder returning soon after discontinuing the remedy. It ought, therefore, to be given daily as a rapidly-acting palliative until the weakness has been gradually overcome by other adequate measures (training to the habit of regularly emptying the bladder, cold baths, douches, cool beddings, etc.), and only then to be gradually withdrawn.—*London Med. Record*, August 15, 1887.

TREATMENT OF CATARRHAL JAUNDICE.

DR. GLUZINSKI, writing in a Polish journal, states that in cases of catarrhal jaundice he has found excellent results follow the treatment recommended by Krull,—viz., the repeated injection into the bowel of large quantities of cold water. This increases the peristaltic action of the intestines, and removes any mechanical obstacle to the flow of bile. Again, as has been shown by Röhrig and Mosler, who injected large quantities of cold water into dogs, the bile is thus rendered both more liquid and more abundant, so that it more easily overcomes any obstruction. At first water at 59° F. is injected into the bowel until the patient complains of a feeling of distention in the abdomen. He is then made to retain it as long as possible. Most patients manage to retain two litres for from a quarter to half an hour. The next day the enema is repeated, but with water about 4° higher. The temperature is again raised on each succeeding day, but when 72° have been reached no further increase is made. The reason of the increase is that the repeated introduction of cold water is apt to irritate the mucous membrane of the bowel. Altogether four or five enemata are sufficient to produce the desired effect. The increase of the biliary secretion may be judged of by the color of the fæces. Of course, the diet is attended to in order to prevent a recurrence of the affection.—*Lancet*, April 23, 1887.

— THE — Therapeutic Gazette.

Whole Series,
Vol. XI.

Detroit, June 15, 1887.

Third Series,
Vol. III. No. 6.

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Original Communications.

HYGIENIC THERAPEUTICS—A LECTURE ON KINESITHERAPY.

BY PROFESSOR DUJARDIN-BEAUMETZ, Paris, France.*

GENTLEMEN:—Last year, in a series of lectures, I undertook the study of alimentary hygiene; this season I intend to complete the subject of hygienic therapeutics by considering the benefits derivable from movements and exercise, air, water, and climate in the treatment of diseases. In the present series, then, I shall successively treat of kinesi-

therapy, massage, hydrotherapy, aerotherapy, and climatotherapy. I hope to show you that these hygienic agents, as well as alimentation, have an important and often preponderant rôle in the treatment of a great number of affections; I hope also that you will receive with the same interest and the same indulgence this second part of my course on hygienic therapeutics.

I shall begin by the study of exercise and of movement as applied to the treatment of diseases. To the sum of these curative means has been given the name of *kinesitherapy* (from *κίνησις*, movement, and *θεραπεία*, treatment). I shall devote this first lecture to the history of gymnastic therapeutics, and the physiological phenomena developed by movement; then, in

* Delivered in Cochin Hospital, and printed from advance sheets.

the next lecture, we shall complete the subject by the examination of the methods and modes of application of kinesitherapy.

I do not intend to go over the entire history of gymnastics; you will find in the Report of Hillairet, in Collineau's "Gymnastics," and in the treatise of Dr. Chancercel on "Medical Gymnastics," published in 1864, all the more important data connected with kinesitherapy.* But it is especially in that remarkable work of Dally, Sr., entitled "Cinésiologie," from which all subsequent writers in this department of therapeutics have drawn so largely, that you will see an exhaustive handling of this whole subject. Finally, in the article of Dally, Jr., in the "Dictionnaire Encyclopédique," you will find much valuable information on this matter, and this especially from a physiological point of view. I shall, then, content myself with giving you a brief summary of the leading facts in the history of medical gymnastics, being persuaded that such an abridged statement will not be devoid of interest and profit.

Prehistoric man, as I told you in my last year's course, can hardly be said to have employed, in the treatment of diseases, any agents except such as are derived from hygiene, and among these must be included movement and exercise. Obligated to contend against the inclemency of the seasons, and against animals physically better endowed than himself in the struggle for existence, primitive man was obliged for his own support and defence to devote himself to a kind of natural gymnastics, which gave him extraordinary strength and agility. There is evidence, also, that he was fond of those dances which are now so common among all savage tribes, as the Australian, the Neo-Caledonian, the Tasmanian; dances inspired, according to Letourneau, by the chase or war. In their hunting dances, these primitive men imitate the actions of the animal which they are wont to pursue, and all the exciting details of the chase; it is a dance of joy and hilarity. As for the war-dance, all savage tribes are wont to prepare themselves for the battle by a pantomimic rehearsal of the fight, and there are innumerable forms of the martial dance, from the cannibal war-

dance of the Neo-Caledonian to the Pyrrhic of the Greeks.

These war-dances are interspersed with chants, and one of the most curious is that which De Rochas has put in the mouth of the Neo-Caledonians: "Shall we fight the enemy? Yes. Are they strong? No. Are they valiant? No. Shall we eat them? Yes."

But at the very dawn of human history, it is among the inhabitants of China and the Indias that we find the first indications of the co-ordination of elements derived from exercise and movement for a determined hygienic purpose. Nearly three thousand years before the Christian era, under the reign of the Emperor Hoang-Ti, appeared a treatise entitled "Cong-fou, or the Art of Man," where were set forth at length all the principles of gymnastics, and even the application of the latter to the treatment of disease. The precepts therein inculcated are in accordance with the Chinese maxim: "Perfect thyself; renew daily thy substance; renew perpetually thy vigor."

The "Cong-fou" insists at great length on the necessity of respiratory gymnastics, and endeavors to explain this necessity from physiological reasons. According to this Chinese book, it is exercise which establishes the equilibrium of respiration, and respiration keeps up the proper adjustment in the movements and composition of the blood. "Respiration," adds this ancient hygienic writer, "changes the composition and proportion of the principles of the blood." It is worthy of remark that these statements are in harmony with modern science.

I shall not here reproduce all the details which this book gives relative to movements to be practised. It prescribes three attitudes or postures, and these admit a great number of varieties. Three ways of breathing are indicated,—one by the mouth, another by the nose, the third by the mouth for inspiration and by the nose for expiration. These forced breathing exercises are as much in use to-day as they were forty-five hundred years ago when first prescribed.

We who belong to the Indo-European family are especially interested in knowing what the Hindoo race knew relative to the gymnastic art and its applications. When the white men, the *Pandous*, sixteen centuries before the Christian era, had driven out the black men, the original occupiers of the soil (the *Kourous*), the Vedas appeared,—the sacred books of the nation, supposed to have been a revelation from Brahma. Among

* Dally père, "Cinésiologie ou science du mouvement dans ses rapports avec l'éducation, l'hygiène et la thérapeutique," Paris, 1857; Dally fils, art. "Gymnastique," in "Dictionnaire encycl.," Hillairet, "Enseignement de la gymnastique dans l'Université," 1878; Collineau, "la Gymnastique," Paris, 1884; Chancercel, "Histoire de la gymnastique médicale depuis son origine jusqu'à nos jours" (Thèse de Paris, 1864).

these Vedas there is a book called the "Ayur-Veda, or Science of Life," which is devoted to medicine.

According to the mythical tradition, an ancient sage, Bahradwaja, to remedy the ills and infirmities which afflicted humanity, demanded help of Indra, who kindly granted the prayers of the sage and taught him the precepts of the "Ayur-Veda."

This "Ayur-Veda," the most ancient book of Hindoo medicine, is divided into eight chapters, one of which is devoted to alimentation and to hygiene. These precepts of the "Ayur-Veda" have been reproduced in the work of Susruta, where they may now be seen. You will find also in the "Code of Manou," compiled about 1300 B.C., much valuable information respecting the hygiene of the Hindu nation. You will there observe, as in the "Cong-fou," precepts concerning frictions, massage, ablutions, and rules for breathing.

The sixth book of the "Laws of Manou" says in express terms, "The Sanniasi (devotee), to purify himself, must bathe and hold his breath six times; he effaces his sins by holding his breath." By the side of these religious rules we must also place the dances which were practised at the doors of the temples, and which you will find described in the recent work of Dr. Edmond Dupouy. These dances, performed by Indian priestesses (bayadères), made part of that assemblage of practices to which has been given the name of sacred prostitution.*

From India the practice of gymnastics was carried over to Egypt, and there maintained its sacred and military character. Writers have especially insisted upon the military character of gymnastics, and under the name of *Agonistics* were included a variety of martial feats and dances. The study of the monuments of Egyptian antiquity leaves no doubt as to the development and importance which these dances and these exercises had acquired in the social education of the Egyptians. You will find in the works of Champollion-Figeac, and especially in the treatise which Krause has devoted to this subject, much valuable information respecting these exercises.

We come now to Greece in the day of its glory, and we may also say, to the time of the highest development of gymnastics as applied to the perfecting of the body and to the treatment of divers diseases. Admirers of physi-

cal beauty, of which the ancient statuary has given us immortal examples, the Greeks carried, as far as possible, the application of exercise and of movement to the vigorous and well-proportioned development of the body, and in the education of their youths and in the training of adult life, the efforts of this ancient people had this one end in view, "To put the soul of a sage into the body of an athlete."

The Olympian and Isthmian games, by the almost divine honors bestowed on the conqueror, show us the importance which all Greece assigned to gymnastics. St. John Chrysostom tells us, in fact, that when the athlete Exanetus returned victorious from the Olympian games, his fellow-citizens made a breach in the walls of his native city to give entrance to the three hundred white horses and their chariots which formed the triumphal procession.

We have quite exact data respecting the Grecian gymnastics, and you will permit me to state rapidly the principal facts. The Greeks divided gymnastic exercises into four classes. There were first the natural exercises, racing, leaping, swimming, walking, wrestling; these were called *palestrics*, from *παλαίω*, to wrestle. Then came movements with military arms; this kind of gymnastics was called *oplomachia*; religious dances constituted *orchestrics*; lastly came *medical gymnastics*, which formed an important branch of the art of healing.

The gymnasia where the Greek youths exercised themselves, and where also philosophers gave instruction, were immense and magnificent buildings, where were accumulated the most beautiful specimens of ancient statuary and Attic marble. Athens had four of these great gymnasia,—the Academy, the Lyceum, the Ptolemon, and the Cynosarge, the latter being reserved for the lower classes and for slaves.

There, under the direction of the *gymnasiarchs*, the young men of Greece engaged with enthusiasm in all sorts of physical exercises. Men and women practised gymnastic exercises completely naked, for the Greeks associated the idea of exercise with that of nudity, as the name *gymnastics* (from *γυμνός*, nude) implies. Without doubt, it is to the practice of these exercises, and this habit of performing them naked, that the Greek sculptors were able to find in the gymnasia models of all that we to-day consider as the ideal of physical beauty.

Herodicus, one of the teachers of Hip-

* Dupouy, "La prostitution dans l'antiquité."

pocrates, was the founder of medical gymnastics. Having experienced in his own person the good effects of exercise, in being thereby cured of a disease regarded as incurable, he recommended it for a great variety of affections, and carried to the extreme the precepts of gymnastics.* Thus, to fever patients he ordered a walk from Athens to Eleusis by way of Megaris, and back again without stopping, which represents a distance of thirty-three kilometres, or about eighteen miles, one way; this would make altogether a pretty long walk of sixty-six kilometres for a patient in a febrile condition. Hence it is that his pupil Hippocrates blames Herodicus, and affirms that often persons succumbed to the effects of these forced exercises.

After Herodicus, next in order comes Iccus. While the former was pursuing his vocation at Athens, Iccus was filling the office of medical gymnasiarch at Tarentum. He was the first to conjoin with the exercises to which the athletes were subjected, a special dietary regimen, thus laying the foundations of physiological training.

Disciplined or trained for an exclusive end, veritable products of the gymnasium, the athletic champions of the Olympian or Isthmian games presented but a moderate resistance to the fatigues of hard labor, and especially to those of war, and made but middling soldiers. Hence it is that Hippocrates, who has so well summarized the precepts pertaining to the application of movement and of exercise to the treatment of diseases, protests strongly against the abuses of gymnastics, and his view is summed up in the following aphorism: "It is from the exact proportion between exercise and health that the harmony of the functions arises."

Greek medicine made every way great account of movements and of exercise in the treatment of diseases. Hence Littré, with good reason, considers medical gymnastics as one of the three sources of Greek medicine, the other two being furnished, the one by the precepts of the priests of Æsculapius, the Asclepiades, the other by the teaching of the philosophers, who, as you know, gave the study of medicine a place among the branches of knowledge which they imparted. For a time the Asclepiades had few followers, and almost everybody frequented the gymnasia, where were found together the gymnasiarchs and the philosophers.

You will find in one of the writings of Hippocrates, a passage which well expresses the notion which was held respecting the action

of gymnastics in the treatment of diseases: "The fullers trample their fabrics under their feet, they wring them, they beat them, they wash and scrub them, and toughen them, removing all their impurities, and it is the same with regard to our bodies, and this is the good which we get from the practice of gymnastics."

In passing from the Greeks to the Romans, gymnastic exercises underwent a transformation. It was no longer the supreme end to attain the ideal of physical beauty, but the predominant desire was, on the one hand, to make soldiers; on the other, gladiators. In annexing baths to the gymnasia, an innovation borrowed from the East, the Romans completely modified these establishments, which little by little became places of debauchery, and they thus prepared the people for the ages of decadence and degeneration which followed; and all this notwithstanding the efforts of Antonius Musa, physician to Augustus and of Charmis of Marseille, who founded hydrotherapy, and substituted for vapor-baths and warm baths the usage of cold water. All the physicians of the Roman period (physicians of Greek origin be it understood) taught the utility of exercise in the treatment of diseases, and you will find in the celebrated collection which Oribasius made in A.D. 360 (under the orders of Julian) of all the writers of antiquity who treated of medicine, an entire book devoted to gymnastics; this work has been translated by Daremberg. You will there see the principal indications formulated by the ancients for the application of gymnastics to the treatment of diseases. There are, moreover, some very interesting paragraphs on respiratory gymnastics.

According to a passage of Antyllus, cited by Oribasius, the act of declaiming with a loud voice has for effect to dilate the thorax and augment the respiratory capacity, but such declamation should be prohibited in cases of hæmoptysis.

According to Galen, also cited by Oribasius, exercise is *all movement whose effect is to change the respiration*. The physician of Pergamus also dwells on the importance of all gymnastic exercises, and, furthermore, of frictions, massage, and even of passive movements, which, in his practice, constituted a veritable Swedish movement cure which was applied to the treatment of fevers.

Leaving the fourth century, we find no writers worthy of note till we come to Aetius in the sixth century, Alexander of Tralles and Paul of Ægina in the seventh century, who

reproduce in their compilations almost the entire work of Oribasius. Then thick night fell on all that pertained to the arts and sciences, a night which lasted till Europe, emerging from out the Middle Ages, saw ushered in the dawn of a new period,—the RENAISSANCE.

During this long period, constituting the Dark Ages, which extends from the sixth to the sixteenth century, comprehending a thousand years, the practice of hygienic exercises was not abandoned, and we see it put in use in the training of knights-errant, and while one set of men shut themselves up in cloisters, and there submitted to the rigorous rules of asceticism which were enforced in these places, others, on the other hand, gave themselves up with ardor to physical exercises, and constituted that chivalry which, if it did not create artists and men of science, nevertheless gave the world strong and vigorous men, capable of bearing the heavy accoutrements of war, and an amount of massive and weighty armor such as fills us with astonishment at the present day.

The Arabian school, which alone preserved during this long space of time the traditions of antiquity, added nothing to the practice of the ancients, manifesting rather degeneration than progress, and in the works of Rhazes you will find but a few short passages pertaining to medical gymnastics.

Coming down to the sixteenth century and the Renaissance, we find awakened a zeal for revising and collating the masterpieces of antiquity, of which collections from all sources were made. In this work of research and annotation, due place was given to gymnastics. Thus, Antonio Gazzi, of Padua, in his "Florida Corona" (Floral Crown), which is, he says, "composed of the most beautiful flowers gathered in the fields of Hippocrates and Galen," has not omitted to compile all that has a bearing on hygiene, and in particular, on gymnastics. Lastly, in 1573, at the end of the sixteenth century, appeared the first special treatise on gymnastics, the production of Mercurialis, who was, as Hillairet has well said, the father of modern gymnastics.

But it is not so much in the works of medicine properly so called, or of hygiene, that you will observe precise indications respecting gymnastics. You will find the importance of bodily exercises recognized, and valuable lessons thereon, in the writings of the philosophers, and especially of the great reformers, who endeavored to introduce sage innovations into the education of the youth,

and among these I may mention Rabelais, Martin Luther, and Montaigne.

In his immortal work, Rabelais dwells much on the necessity of gymnastic exercises in the education of his *protégé*, the young Gargantua, and we there find the precepts of the ancients accommodated to the tastes of the period. He insists particularly on the utility of respiratory gymnastics, which he says develop and strengthen the organs and muscles of the thorax.

Luther, the father of the Protestant Reformation, is quite as affirmative on the subject of the necessity of gymnastics for the preservation of the health. Gymnastic exercises, he says, give strong and robust limbs, and promote the health of the whole body. Youths who are interested in them will not be likely to abandon themselves to lazy habits, to debauchery, to strong drink, or to card-playing. Our great philosopher Montaigne has a striking passage in his letter to Diana of Frix, Countess of Gurson, in which he sets forth in a clear manner the importance of making the physical training keep pace with the moral; and I cannot but think, with Dally, that it would be well if the entire passage were printed in large letters on the walls of our schools: "It is not a soul, it is not a body, that you are developing, it is a man—and you are not to treat them as if they were separate, or cultivate the powers of the one without at the same time cultivating those of the other. They should, in fact, be managed like a pair of horses harnessed together."

Such were the views of the reformers of that time, but these precepts bore no fruit in the way of gymnastic institutions, despite the earnest pleading in behalf of a better system of physical training, at a later day, by Rousseau, who, in his "Emile," again urges the necessity of bodily exercises, and compares gymnastics to dancing, then much in vogue, and to the disadvantage of the latter, which he affected to despise.*

I must not omit in this connection to mention the names of Nicolas Audry and Tissot. The phlegmatic dean of the Faculty, sworn adversary of the surgeons, whose thesis bore the strange title: "On the Influence which the Cheerful Demeanor of the Physician and the Obedience of the Patient may have on the Cure of Diseases,"—Nicolas Audry, published

* He says, in plain words, that he would rather skip like a roebuck than dance like some of the performers of the period: "J'en ferai l'émule d'un chevreuil plutôt que d'un danseur de l'Opéra."

in 1741 a treatise in two volumes on "Orthopædics," in which he rightly insists on the importance of movements and of exercise in the treatment of the deformities of early life. Tissot, who was surgeon-general of the light cavalry, published in 1780 a very complete work on gymnastics, which has more or less influenced all subsequent writers on the subject.

Lastly, at the end of the eighteenth century, and coincidently with the appearance of the works above mentioned, gymnastic exercises acquired a permanent place in all public systems of education, and this salutary innovation was due to one who may be regarded as the true founder of modern primary instruction as instituted on a common-sense basis: I refer to Pestalozzi. In this connection I need but refer to one simple, unpretending treatise of this remarkable man, with this naïve title, "How Gertrude taught her Children,"—a book which lays down in a masterly manner the principles of the inductive system of education. Pestalozzi was a Swiss, of the canton of Unterwald, and no place could have been better chosen to serve as the cradle of modern gymnastics. Placed in the centre of Europe, inhabited by a population of mountaineers skilled in exercises of the body, Switzerland adopted with ardor the ideas of Pestalozzi, and there sprang up under the impulse emanating from him, gymnasiums at Stanz, at Berthoud, and at Yverdon, where flocked not only the Swiss youths, but also people from neighboring countries. Gulsmuths, a native of Saxony, became the pupil of Pestalozzi, and carried his method to Germany, while Natchtigall did the same for Denmark, so that at the commencement of this century, three European countries possessed gymnasia,—Switzerland, Germany, and Denmark.

From this time onward, gymnastics became a regular part of scholastic and medical training, and were cultivated in all parts of the world. There are four names in particular which sum up the efforts made in this direction during the first part of the nineteenth century,—Ling, of Sweden; Jahn, of Germany; Clais and Amoros, of France.

Ling, while a student of the University of Upsall, was suffering from retraction of the muscles of one of his arms, which resulted from a wound which he had received in 1801 in a naval battle between the English and Danes. He combated this retraction by fencing, and delighted with the remarkable results which he had obtained, he abandoned

his chair of Scandinavian poetry and mythology, to devote himself specially to the teaching of gymnastics. He originated that aggregate of special exercises to which has been given the name of Swedish gymnastics, and which I shall describe at length in the next lecture, when I come to treat of the exercises of gymnastics.

If with Ling, gymnastics became identified with medicine, and to such an extent that he may be regarded as the founder of modern kinesitherapy, with Jahn it took another turn, and became associated with patriotism and military prestige. Jahn desired that gymnastics should help on the triumph of the German ideal, and took for his device: "Liberty, autonomy, our country's glory!"

As for France, it is to Clais and Amoros that we owe the establishment of the first gymnasia. Clais was born in Berne in 1780. He became professor at the academy of this city, then came to France, passed over into England, where he sojourned awhile, then came back to France again, carrying everywhere his precepts of gymnastics. It is especially in a report to the Society of Medicine of Paris that you will find the clearest indications as to what his teaching of gymnastics consisted in.

Amoros was a Spaniard, who, for political reasons, was exiled from his native country. He made France his home, and devoted his life to the propagation of gymnastics. I myself when a boy attended the exercises of Colonel Amoros. These exercises took place in an immense gymnasium, which he had built in the Champs Elysées, in the street which now bears the name of Jean Gougon. Thither Tuesdays and Sundays the pupils of the different boarding-schools were conducted, and when the exercises by section were finished, we were all marshalled together into an apartment, where Colonel Amoros taught us to perform, while singing, those exercises in concert which constituted more particularly the gymnastic system of Amoros.

From the time of Clais and Amoros, gymnastics underwent rapid development in France, and became obligatory in the primary schools, while in the army, the soldiers were taught to execute those concert movements, and those movements tending to give suppleness to the limbs, which so fit them for their special calling.

Among the numerous masters of gymnastics, there is one whom I ought to signalize, especially since all mention of his name is omitted in the otherwise very complete thesis

of Chancerel; I allude to Napoleon Laisné. He was the first to teach gymnastics in the hospitals of children, and under the direction of Blache and of Bouvier, he applied gymnastic exercises in our hospitals to the treatment of convulsive disorders, such as chorea; and to-day, despite his great age, Laisné has not ceased personally to teach and to direct the teaching of gymnastics in our hospitals and schools.

Before setting forth the various methods and their application to therapeutics, I desire to devote the rest of this lecture to a rapid survey of the physiological action of gymnastic exercises. It is on these effects that we base the applications of medical gymnastics.

Gymnastics act first on the circulation and respiration. The effect on the respiration is, perhaps, far the most important, and Dally has emphasized this point; and in this connection I need only recall to your minds the importance which the ancients attached to the influence of exercise on respiration.

In a general way, gymnastic exercises augment considerably the chest capacity. You can judge of the increase of the amplitude of the chest by the use of registering apparatus to measure the respiratory movements.

In a work written conjointly by Chassagne and Dally* at the Military School of Gymnastics of Joinville-le-Pont, these authorities have shown that of four hundred and one individuals subjected to gymnastic exercises for five months, in three hundred and seven (or seventy-six per cent.), the bi-mammary circumference of the thorax had increased by an average of two and one-half centimetres. In Germany, Dr. Abel obtained similar results, seventy-five per cent. of individuals practising gymnastics having experienced an augmentation of the thorax.

Another mode of mensuration consists in applying to the thorax the process employed in craniometry; this is Fourmantin's method. Under the name of *thoracic index*, he gives the centesimal relation of the transverse diameter of the thorax to its antero-posterior diameter, a relation expressed in the following

formula: $\frac{DT}{100} \times DAP$.

The flatter the chest, the higher will be the index figure, and the rounder the chest, the less will be the figure, for flattening of the chest corresponds to low development and low respiratory capacity. In phthisical pa-

tients, for instance, the thoracic index varies between 135 and 152, while in individuals possessing a sufficient and normal respiratory capacity this index is but 128. Gymnastic exercises tend to lower the thoracic index.

But the instrument which most clearly expresses the amplitude of the respiratory movements is the pneumograph, which enables us, as you may now see, perfectly to enregister the amount of respiratory expansion.

In the interesting researches made by Marey,† "On the Influence of Movement on the Respiration and Circulation," he obtained, by the aid of the pneumograph, tracings which I here place before you, and which show you, better than anything else can do, that under the influence of gymnastic exercises the amplitude of the thoracic movements may be doubled.

This augmentation in the capacity of the thorax has several consequences. First of all, it enables a greater quantity of blood to come in contact with the air of respiration, and this increases the combustions of the economy. It also enables a greater quantity of air to penetrate the lungs. This latter is of capital importance, for this augmentation of the respiratory capacity opposes that breathlessness (*i.e.*, that marked increase of respiratory movements) characteristic of active exercise. Edward Smith has, in fact, shown us, that if we represent by the figure 1 the quantity of air which hourly penetrates the lungs (five hundred and forty litres) in an individual lying down, this figure will augment in the following proportions, if the individual devotes himself to the exercises below specified:

Standing.....	1.33
Moderate walking	1.90
Rapid walking.....	4.76
Horseback-riding	2.20
" galloping.	3.16
" trotting	4.05
Swimming	4.31
Rapid running.....	7.00

In order to cause a sufficiently large quantity of air to penetrate the lungs during the corporeal exercises which I have just enumerated, such an augmentation of the ordinary movements is required, that breathlessness is rapidly produced in persons who are not habituated to these gymnastic exercises. But, as I have just told you, gymnastics, by augmenting the respiratory capacity, enable the individual to breathe in more air with each respiration,

* Chassagne and Dally, "Influence of Gymnastics on the Development of Man," 1881.

† Marey, *Acad. des Sciences*, July 10, 1881.

and thus lessen the number of respirations and avoid getting out of breath.

In the tracings which I have just shown you, you saw that the pulse was also indicated, and that exercise augments both the number of the pulsations and their amplitude. This influence of gymnastics on the circulation is quite as important as their influence on the respiration. The greater activity of the circulation results from two causes,—first, the muscular contraction; second, the increase of pulmonary capacity.

Muscular contraction energizes the venous circulation. We have a proof of this in the operation of blood-letting, when, in order to obtain a freer flow of blood from the open vein, we tell the patient to execute with the hand movements which bring into play the muscles of the forearm. The enhanced activity of the pulsations of the heart is also due to the fact that the pulmonary capacity being augmented, the demand for venous blood by the lungs is greater. More blood comes to the right ventricle, which causes more to flow into the left ventricle, so that the venous circulation and the arterial circulation are augmented. As to the action on the heart-muscle, I shall take that up in the next lecture, when I come to the treatment of diseases of the heart by gymnastics.

In the muscles the influence is more direct. Forcible contractions give rise, in the muscular substance, to physical and chemical phenomena which augment the nutritive exchanges, and cause the muscular bundles to become thicker and firmer. I have no need to give you in this place direct proofs of this fact. Such physiological proofs abound, and you have only to confine one limb in splints and exercise the other, to have a demonstration of the atrophy which attends the bandaged limb, and the increased development which marks the limb that is exercised.

These exercises not only promote the development of the muscles, they act also favorably on the nervous system. In fact, every co-ordinated muscular movement entails a nervous expenditure, and without going as far as DuBois-Reymond (*Revue Scientifique*, 1880), who affirms that the exercises of the body are rather exercises of the central nervous system, than muscular exercises, one may truly say that gymnastics tend to restore the equilibrium between the functions of the brain and those of the spinal cord.

Gymnastics act not only on the respiration, circulation, musculation, and innervation, they also promote secretion and excretion.

All movements which are somewhat prolonged provoke the production of sweat, which is one channel of elimination for urea and uric acid. I have seen the perspiratory secretion augment by an hour's exercise to six hundred grammes, and even in some subjects attain the figure of fifteen hundred grammes. This is, you know, a channel of excretion which is vicarious with the renal emunctory, and which we may utilize to great advantage in therapeutics.

If I were to sum up in one sentence the physiological action of gymnastics and bodily exercise, I would say that they promote and invigorate nutrition. I have just showed you that by the enhanced energy of the circulation, and the increase of the respiratory capacity, a greater quantity of venous blood comes in contact with the air, and that this energizes the phenomena of combustion. I have shown you, moreover, that by exercise the muscular interchanges are promoted.

This augmentation in the muscular and respiratory combustions entails an augmentation of heat, and in this connection we may properly refer to the careful experiments of Rouhet and of François Franck.* These experimenters have demonstrated that muscular exercises augment the central temperature, but that, owing, on the one hand, to the production of sweating, and, on the other, to the greater quantity of venous blood brought in contact with the air of respiration, and producing a veritable pulmonary sudation, equilibrium is established between the external temperature, which falls, and the temperature of the deep parts, which rises.

But this is but one aspect of the question. Last year I showed you the important rôle of the cell in nutrition. Under the influence of gymnastics, the activity of the cellular functions is enhanced and regulated, the intracellular combustions are energized, the leucomanes, those toxic alkaloids which the organic cell constantly fabricates, augment in quantity, and are more actively eliminated; and from all these circumstances it results that fatty substances and waste extractives are burned, cell repair is promoted, and equilibrium is effected between the cells of the brain and spinal cord; in a word, general nutrition is expedited.

The digestive functions do not remain indifferent to this nutritive gain, and they are

* Rouhet, "Experimental Researches on the Physiological Effects of Gymnastics and of Training," pp. 36 and 45. Paris, 1881.

beneficially influenced in two ways,—first by the contractions of the diaphragm and abdominal muscles, which invigorate the abdominal and hepatic circulation, and indirectly by the augmentation of the combustions of the economy; and it is a trite thing to say that exercise increases the appetite. Hence Chomel was right in affirming that one digests with his legs as well as with his stomach.

It must be borne in mind that to obtain this enhanced activity of digestion, it will not do to undertake violent exercise immediately after the ingestion of a hearty meal. You all remember the fact, so frequently mentioned in treatises on physiology, that when you take two dogs after a full meal, and shut up one of them in its kennel, and cause the other to engage in violent running, digestion is more advanced (other things being equal) in the dog which is kept at rest than in the one which is subjected to active exercise.

This general influence on nutrition is represented by palpable signs, and this is the case even in adult men,—augmentation of muscular force and augmentation of weight. In a table which you will find in the work of Chassagne and Dally, and which I here place before you, you see indicated the augmentation in kilogrammes noticed in the pupils of the Military School of Joinville le Pont:

	Augmenta- tion in kilo- grammes.	Percent- age of pupils.
Lifting force.....	28.00	86
Force of flexion of the forearm on the arm.....	3.14	63
Force of flexion of the fingers on the palm of the hand.....	9.75	81
Force of the extended arm.....	2.41	74
Force in carrying loads.....	11.52	66
Force of progression or of traction....	9.81	65
Force of the triceps contraction, or of ankle contraction.....	10.08	75

As to the augmentation of weight, it is far from being constant under the influence of gymnastic exercises. Hence among these same pupils, trained in gymnastics, thirty-four per cent. only, at the end of six months of training, had increased in weight by an average of 1.14 kilogrammes; the remaining sixty-six per cent. had either not gained at all, or had lost in weight, and this is easily explained. Gymnastic exercise, by favoring the combustion of fats, and by augmenting the organic combustions generally, by invigorating the cellular nutrition, is a powerful means for promoting emaciation, of which we avail ourselves in the treatment of obesity. Hence it is that gymnastics have the effect to make

corpulent persons grow lean, and to lose in weight, while both muscular development and muscular force are augmented.

In individuals who have no accumulation of fat in the cellular tissue, corporeal exercises, on the contrary, will have the effect by augmenting these muscles to increase their weight. But to obtain these effects it will not do to carry the exercise too far, for, if practised to excess, the individual will grow lean and become feeble, and offer all the symptoms included under the name of *overstrain* (*surmenage*).

The effects of overwork have been well studied in animals, and, in particular, in horses. When you subject animals to excessive toil, you see them grow lean and feeble, despite abundant feeding, and they easily become a prey to epizootic diseases. It is the same with man, for gymnastic exercises, carried to too great a length, weaken and prostrate, and render the person an easy victim to tuberculosis.

What I say, gentlemen, has been known from remote antiquity, and the Father of medicine, while recognizing the utility of physical exercises, protests against their excess. He shows that athletes in particular stand the fatigues of war with difficulty, and fall a prey more readily than others to diseases; in a word, they make poor soldiers.

But if for the adult age gymnastics when pressed too far are hurtful, for children a reasonable amount of such exercises is in every way advantageous. In the early period of life the child is in the plastic, formative stage of its existence, and its constitution readily takes the bent which its physical education imparts. In giving the child a judicious gymnastic training you develop the skeleton and the muscular tissue, you augment the capacity of the thorax, you invigorate the circulation, you equilibrate the functions of the nervous system, you favor nutrition; in a word, you develop all that pertains to robust manhood.

Therefore there is general agreement in giving gymnastics an increasingly prominent place in the education of boys and girls. But this is a point to which our civilization has long been tending, and I have already said sufficient about its importance. I pass on now to a consideration of the applications of gymnastics to the treatment of diseases, a subject which I shall take up in the next lecture.

CRITICAL OBSERVATIONS AND EXPERIMENTAL STUDIES ON THE INFLUENCE OF PHARMACOLOGICAL AGENTS ON PERIPHERAL VESSELS.

BY PROF. R. KOBERT.*

PART II.

IN the first part of this work (THERAPEUTIC GAZETTE, January 15 and February 15) I have given a review of all the investigations previously made by the authors of other countries upon the circulation in the organs of warm-blooded animals, from the standpoint of its bearing upon the study of pharmacology.

In these papers I have cited Alexander Schmidt, of Dorpat, as the first writer who had made and reported experiments upon organs removed from the body with various drugs. Historically, however, this is not correct, for Friedrich Bidder has informed me that in 1862, five years before Schmidt, he had made such experiments, assisted by his son, Ernst Bidder, upon kidneys removed from the body.†

Similar experiments were made in 1849 by Loebell.‡ After this historic digression I will commence my present paper.

In my paper in the THERAPEUTIC GAZETTE of February 15, 1887, p. 90, I said that I would speak later of the drugs of the digitalis group, which possess other properties than those already recognized.

The great importance which the digitalis group possess in therapeutics has led me to review all my previous experiments with new apparatus before studying other allied substances, and I have been assisted by Dr. Hermann Thomson, assistant in the clinic of gynecology, who has reported his experiments upon the working of digitalis upon the vessels, and also the influence of drugs which I had not previously studied, in his inaugural dissertation,§ and also in the Russian journal *Wratsch*. I append on page 371 a table of substances, which in all organs examined and under all circumstances cause blood-vessels to contract.

* Chief of the Pharmacological Laboratory at Dorpat, Russia.

† Ernst Bidder, "Contribution to the Study of the Functions of the Kidney," *Inaugural Dissertation*, Dorpat, 1862. With a lithographic illustration.

‡ Loebell, "De Conditionibus, Quietis Secretiones in Glandulis Perficuntur," Marburg, 1849.

§ "Upon the Influence upon Peripheral Vessels of Pharmacological Agents," *Inaug. Dissert.*, Dorpat, 1887, 106 pages; with a lithographic plate describing the apparatus used.

This table shows that barium chloride has a marked effect in contracting the blood-vessels. In contrast to all the substances of the digitalis groups this agent produces no effect upon the heart, nor does it further the development of bacteria and also decomposition products when kept for some time in watery solution. I can, therefore, recommend barium chloride as an agent to produce the effect of digitalis locally upon a limb, for example, where dilated blood-vessels exist. The best application for dilated cutaneous veins (for example, on the legs) is the following:

R Barii chloridi, gr. xxx;

Dissolve in distilled water, and mix thoroughly

Lanolini, ʒiij¼;

Olei amygdalarum dulc., ℥lxxv. M.

F. Unguentum.

Sig.—Three times daily, with friction, whenever dilated blue veins shine through the skin.

Barium chloride can be also used in the place of substances of the digitalis group in cases of heart-disease where help is demanded so soon that remedies given internally are not available.¶ We can then use

R Sol. barii chloridi, 1 to 100.

Sig.—⅓ to ½ the contents of a hypodermic syringe should be given at a dose for heart-lesions with deficient compensation.

We know that substances of the digitalis group have an influence upon the gastrointestinal tract to such an extent that vomiting and purging may be excited by these drugs, not only when given by the mouth, but also when given subcutaneously. Barium chloride and all the soluble salts of barium have an effect upon the intestine, in that they are excreted through the intestines after being taken by the mouth, and in large doses may cause diarrhoea. It is not yet known that the digitalis group are excreted through the intestines, but the analogy with the barium salts suggests such a process. For the physician the fact of practical importance remains that when administering barium chloride, if diarrhoea supervenes, the drug should be discontinued.

Barium chloride has an influence, not only upon the vessels and intestinal tract, but also upon the heart, analogous to the effect of digitalin. Experiments upon frogs show that after injection of a small quantity of barium salt

¶ At least until we possess some other substance of the digitalis group suitable for subcutaneous injection, and better in effect than those now in our hands. *As yet we have not one such substance.*

TABLE I.

Table of those Substances of the Digitalin Group which Contract the Vessels of all Organs.

I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.
No. of experiment.	Kind of animal.	Organ.	Pharmacological agent.	Per 1000 contents of blood in IV.	Duration of action.	Changes of velocity of outflow in p.p. cent.	Transfused absolute quantity of IV. in grammes.	Special remarks.
1	Ox.	Kidney.	Chloride of barium.	0.40	1	— 11	40	Organs and blood used 18 hours after death of animal, kept on ice. After the contraction, in the next minute, a well-marked compensatory widening followed.
2	Ox.	Kidney.	Chloride of barium.	2.00	1	— 20	190	
3	Ox.	Kidney.	Chloride of barium.	2.00	1	— 10	200	
4	Sheep.	Spleen.	Chloride of barium.	2.00	3	— 8	180	
5	Frog.	The whole body.	Chloride of barium.	0.50	5	— 20	15	Central nervous system preserved.
6	Frog.	The whole body.	Chloride of barium.	0.50	6	— 45	5	
7	Frog.	The whole body.	Chloride of barium.	0.50	2	— 82	2	
8	Sheep.	Kidney.	Chloride of strontium.	2.00	2	— 33	100	
9	Sheep.	Kidney.	Chloride of strontium.	1.00	2	— 21	90	Central nervous system destroyed.
10	Sheep.	Spleen.	Chloride of strontium.	1.00	1	— 44	50	
11	Frog.	The whole body.	Chloride of strontium.	2.50	4	— 4	12	
12	Frog.	The whole body.	Chloride of strontium.	0.50	7	— 9	25	
13	Frog.	The whole body.	Chloride of strontium.	2.00	6	— 63	2	Central nervous system preserved.
14	Frog.	The whole body.	Chloride of strontium.	10.00	3	— 50	60	
15	Frog.	The whole body.	Chloride of strontium.	2.50	2	— 18	13	
16	Hog.	Kidney.	Veratrine hydrochlorate.	0.02	4	— 44	1	
17	Frog.	The whole body.	Veratrine hydrochlorate.	0.01	8	— 16	0.8	Central nervous system preserved. The brain only destroyed.
18	Frog.	The whole body.	Veratrine hydrochlorate.	0.02	6	— 50	0.1	
19	Frog.	The whole body.	Veratrine hydrochlorate.	0.05	4	— 75	0.7	
20	Frog.	The whole body.	Veratrine hydrochlorate.	0.02	3	— 10	0.6	
21	Frog.	The whole body.	Salicylate of physostigmine.	0.04	3	— 5	1.4	Central nervous system preserved.
22	Frog.	The whole body.	Salicylate of physostigmine.	0.10	3	— 12	3.0	
23	Frog.	The whole body.	Salicylate of physostigmine.	0.10	2	— 5	2.0	
24	Frog.	The whole body.	.....	0.15	5	— 34	4.5
25	Frog.	The whole body.	0.15	3	— 34	1.5	After-effect 7 minutes; central nervous system destroyed.
26	Frog.	The whole body.	0.08	3	— 38	1.6	Central nervous system destroyed.
27	Sheep.	Kidney.	Antiarine.	Very little.	2	— 12	Central nervous system preserved.
28	Sheep.	Kidney.	Antiarine.	Very little.	1	— 40	.....
29	Frog.	The whole body.	Antiarine.	Very little.	2	— 13	.....
30	Frog.	The whole body.	Antiarine.	Very little.	2	— 13	.....
31	Frog.	The whole body.	Antiarine.	Very little.	3	— 19	After-effect 8 minutes. Central nervous system destroyed.
32	Frog.	The whole body.	Antiarine.	Very little.	4	— 17	.....
33	Frog.	The whole body.	Antiarine.	Very little.	2	— 10	.....
34	Ox.	Foot.	Sabadilline.	0.08	6	— 21	3.0	
35	Ox.	Foot.	Sabadilline.	0.10	4	— 14	2.0	After-effect 9 minutes.
36	Sheep.	Kidney.	Sabadilline.	0.10	4	— 32	2.0	
37	Sheep.	Kidney.	Sabadilline.	0.03	2	— 24	0.3	
38	Frog.	The whole body.	Sabadilline.	0.05	3	— 3	1.7	
39	Frog.	The whole body.	Sabadilline.	0.10	3	— 14	3.0	Central nervous system destroyed. Central nervous system preserved.
40	Frog.	The whole body.	Sabadilline.	0.10	3	— 16	2.4	
41	Sheep.	Kidney.	Helleboreine.	0.05	4	— 35	3.0	
42	Sheep.	Spleen.	Helleboreine.	0.06	3	— 32	4.0	
43	Frog.	The whole body.	Helleboreine.	0.40	3	— 15	10.0	Central nervous system preserved.
44	Frog.	The whole body.	Helleboreine.	0.50	2	— 34	5.2	After-effect 11 minutes; central nervous system preserved.
45	Frog.	The whole body.	Helleboreine.	0.50	2	— 19	5.0	Central nervous system preserved.
46	Frog.	The whole body.	Helleboreine.	0.40	3	— 11	16.0	Central nervous system destroyed.
47	Frog.	The whole body.	Helleboreine.	0.50	3	— 13	16.8	
48	Ox.	Foot.	Soillaine.	0.83	1	— 68	1.2	
49	Sheep.	Kidney.	Soillaine.	0.06	1	— 27	1.5	
50	Frog.	The whole body.	Soillaine.	0.10	3	— 11	0.6	Central nervous system preserved.
51	Frog.	The whole body.	Soillaine.	0.20	2	— 11	0.6	
52	Frog.	The whole body.	Soillaine.	0.20	2	— 12	1.2	
53	Frog.	The whole body.	Soillaine.	0.10	5	— 39	2.7	
54	Frog.	The whole body.	Soillaine.	0.08	4	— 46	9.2	Central nervous system destroyed.
55	Frog.	The whole body.	Soillaine.	0.30	4	— 9	5.4	
56	Frog.	The whole body.	Soillaine.	0.30	2	— 5	0.9	
57	Ox.	Foot.	Adonidine.	0.05	4	— 12	1.7	
58	Ox.	Foot.	Adonidine.	0.07	4	— 13	1.6	After-effect 7 minutes. After-effect 14 minutes. Central nervous system preserved.
59	Ox.	Foot.	Adonidine.	0.17	4	— 20	9.0	
60	Ox.	Foot.	Adonidine.	0.33	4	— 28	10.0	
61	Sheep.	Foot.	Adonidine.	0.05	3	— 38	0.7	
62	Sheep.	Foot.	Adonidine.	0.07	4	— 56	2.7	Central nervous system destroyed.
63	Frog.	The whole body.	Adonidine.	0.10	2	— 17	1.5	
64	Frog.	The whole body.	Adonidine.	0.05	3	— 10	1.5	
65	Frog.	The whole body.	Adonidine.	0.10	1	— 17	1.7	
66	Ox.	Foot.	Convallamarine.	0.02	4	— 14	2.0	After-effect 7 minutes. After-effect 11 minutes. Central nervous system destroyed.
67	Ox.	Foot.	Convallamarine.	0.10	4	— 25	8.0	
68	Ox.	Foot.	Convallamarine.	0.05	2	— 35	4.0	
69	Ox.	Foot.	Convallamarine.	0.10	2	— 25	6.6	
70	Frog.	The whole body.	Convallamarine.	0.20	3	— 9	8.0	Central nervous system preserved.
71	Frog.	The whole body.	Convallamarine.	0.20	4	— 0	6.0	
72	Frog.	The whole body.	Convallamarine.	0.20	4	— 17	4.4	
73	Frog.	The whole body.	Convallamarine.	0.20	2	— 16	2.0	
74	Frog.	The whole body.	Convallamarine.	0.04	3	— 6	1.8	After-effect 16 minutes. Central nervous system destroyed.
75	Frog.	The whole body.	Convallamarine.	0.12	2	— 10	0.8	
76	Frog.	The whole body.	Erythrophleine.	0.02	2	— 55	1.5	
77	Ox.	Kidney.	Erythrophleine.	0.04	3	— 23	13.5	
78	Frog.	The whole body.	Erythrophleine.	0.50	3	— 10	4.8	Central nervous system preserved.
79	Frog.	The whole body.	Erythrophleine.	0.20	3	— 5	0.8	
80	Frog.	The whole body.	Erythrophleine.	0.20	1	— 20	9.2	
81	Frog.	The whole body.	Erythrophleine.	0.20	1	— 6	6.0	
82	Frog.	The whole body.	Strophanthine.	2.10	3	— 12	5.5	After-effect 7 minutes. After-effect 5 minutes. After-effect 13 minutes.
83	Frog.	The whole body.	Strophanthine.	2.10	2	— 17	7.0	
84	Frog.	The whole body.	Strophanthine.	1.40	2	— 25	1.0	
85	Ox.	Foot.	Strophanthine.	1.40	1	— 12	4.0	
86	Ox.	Kidney.	Strophanthine.	1.40	2	— 33	1.0	
87	Ox.	Kidney.	Strophanthine.	1.40	2	— 20	3.0	
88	Ox.	Kidney.	Strophanthine.	1.40	2	— 25	3.0	
89	Ox.	Kidney.	Strophanthine.	1.40	2	— 25	3.0	

the heart ceases to beat in systole precisely as after the use of digitalis. Striped muscle furnishes, however, an excellent differential point between barium salts and digitalis. All drugs of the digitalis group, when given in small medicinal doses, produce a lessening of the contractile power of muscle, so that patients who are taking scilla, convallaria, adonis, digitalis, strophanthus, etc., after a short time feel their muscular power greatly lessened in spite of improved cardiac rhythm, lessened dropsy, and stronger pulse. Under the influence of barium salts, on the contrary, the extent and degree of muscular contraction (independently of nervous influence) are increased, as Brunton* has found, and I bear added witness to the fact.

Barium in this particular resembles veratrine, which has a similar effect, but in much greater degree, but is so poisonous that we cannot use it as a therapeutic agent.

It was, however, of interest to Thomson and me to know that strontium exercised a like contractile force upon the blood-vessels, and the table shows its effects to be analogous to that of barium.

The table shows also the vaso-motor effect of physostigmine and veratrine, as was indicated in my former experiments; this is also true of antiarine and sabadilline.

Of the substitutes for digitalis in practical use I have examined helleborine, soillaine, convallamarine, erythrophleine, oleandrine, and apocynine, and found them possessed of power to contract blood-vessels. We have also found the same power in helleboreine, soillaine, con-

vallamarine, and erythrophleine, and we include, as of similar effect, adonidine and strophanthine. All of these drugs have the effect of digitalin of Schmiedeberg,—i.e., they narrow the blood-vessels of all organs which were examined in the course of my investigations; also the kidneys. To explain what is meant by "digitalin of Schmiedeberg," I will say that under this name I understand that body which my honored teacher, O. Schmiedeberg, has described in the third volume of his *Archives*, page 27, and which contains sixty per cent. oxygen and eight per cent. nitrogen. It is absolutely insoluble in water, and is contained in the plants of the digitalis family in very small amounts, and is therefore very expensive. The greater portion of the proportions of digitalis in the market (French, English, and German) contain a very small amount or none at all. This point would not be mentioned if Lafon, a French author, in the *Bullet. de l'Académie de Médecine de Paris*, 1886, No. 12, p. 528, had not published an incorrect explanation regarding Schmiedeberg's researches, although he had been in the institute of the professor. Against his errors Merck, of Darmstadt, published a protest, which was given in the THERAPEUTIC GAZETTE, 1886, p. 768. The statements of Merck and Schmiedeberg agree exactly.

In marked contrast to all the substances previously described are two others, digitoxin† and digitalein,‡ of which I have specimens from Schmiedeberg himself, and which exercise a dilating, and not contracting, power upon the vessels of the kidneys.

* *Transactions of the Royal Society*, i., 1884, p. 222: "Action of Salts of the Alkaline Group on Muscle and Nerve."

† Described by Schmiedeberg in Bd. iii. p. 35, of his *Archives* (Leipzig, Vogel, 1875).

‡ Described as above.

TABLE II.

Influence of Digitoxin and Digitalein on the Spleen, Foot, and whole Extremity.

I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.
No. of experiment.	Kind of animal.	Organ.	Pharmacological agent.	Per 1000 contents of blood in IV.	Duration of action.	Changes of velocity of outflow in per cent.	Transfused absolute quantity of IV. in grammes.	Special remarks.
90	Dog.	Whole extremity.	Digitoxin.	0.010	18	— 64	3.0	
91	Sheep.	Spleen.	Digitoxin.	0.008	2	— 13	0.9	
92	Ox.	Foot.	Digitoxin.	0.016	3	— 45	0.4	
93	Ox.	Foot.	Digitoxin.	0.016	2	— 42	0.3	After-effect 10 minutes.
94	Ox.	Foot.	Digitoxin.	0.040	2	— 36	0.7	After-effect 10 minutes.
95	Ox.	Foot.	Digitoxin.	0.006	2	— 30	0.3	After-effect 8 minutes.
96	Ox.	Foot.	Digitoxin.	0.008	2	— 40	0.13	After-effect 13 minutes.
97	Sheep.	Spleen.	Digitalein.	0.016	3	— 72	0.1	After-effect 11 minutes.
98	Sheep.	Spleen.	Digitalein.	0.012	3	— 9	0.4	
99	Ox.	Foot.	Digitalein.	0.083	10	— 23	0.6	
100	Ox.	Foot.	Digitalein.	0.057	3	— 10	1.5	
101	Ox.	Foot.	Digitalein.	0.030	3	— 40	0.9	After-effect 12 minutes.
102	Ox.	Foot.	Digitalein.	0.830	3	— 0	3.0	
103	Ox.	Foot.	Digitalein.	0.830	4	— 14	3.0	

TABLE III.
Influence of Digitoxin and Digitalein on the Kidneys.

I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.
No. of experiment.	Kind of animal.	Organ.	Pharmacological agent.	Per 1000 contents of blood in IV.	Duration of action.	Changes of velocity of outflow in per cent.	Transfused absolute quantity of IV. in grammes.	Special remarks.
104	Hog.	Kidney.	Digitoxin.	0.030	3	+ 177	2.8	Afterwards a compensatory contraction of the vessels lasting 7 minutes. A similar contraction of 8 minutes' length.
105	Hog.	Kidney.	Digitoxin.	0.004	5	+ 5	0.04	
106	Hog.	Kidney.	Digitoxin.	0.020	5	+ 9	1.84	
107	Sheep.	Kidney.	Digitoxin.	0.033	2	+ 75	0.4	
108	Ox.	Kidney.	Digitoxin.	0.016	7	+ 15	1.0	
109	Ox.	Kidney.	Digitoxin.	0.032	4	+ 20	6.0	Later compensatory contraction. After poisoning a compensatory contraction of —20 per cent. Very pronounced compensatory contraction. Later compensatory contraction. Later a brief compensatory contraction.
110	Sheep.	Kidney.	Digitalein.	0.016	2	+ 12	1.1	
111	Sheep.	Kidney.	Digitalein.	0.010	4	+ 14	1.2	
112	Sheep.	Kidney.	Digitalein.	0.016	4	+ 27	1.6	
113	Sheep.	Kidney.	Digitalein.	0.016	3	+ 28	2.0	
114	Sheep.	Kidney.	Digitalein.	0.009	3	+ 17	1.3	
115	Hog.	Kidney.	Digitalein.	0.020	2	+ 66	1.1	
116	Hog.	Kidney.	Digitalein.	0.020	2	+ 88	1.9	
117	Dog.	Kidney.	Digitalein.	0.333	4	+ 24	20.0	
118	Dog.	Kidney.	.....	0.313	2	+ 50	10.0
119	Dog.	Kidney.	Digitalein.	0.333	4	+ 50	10.0	Central nervous system preserved.
120	Ox.	Kidney.	Digitalein.	0.166	7	+ 30	18.0	
121	Ox.	Kidney.	Digitalein.	0.083	3	+ 13	11.0	
122	Frog.	The whole body.	Digitalein.	0.100	2	+ 25	2.8	
123	Frog.	The whole body.	Digitalein.	0.040	3	+ 5	1.0	
124	Frog.	The whole body.	Digitalein.	0.040	4	+ 16	0.5	

From a comparison of these two tables it is evident that *the effect of digitoxin and digitalein differs from that of the others of the digitalis group in that in the doses in which we have reason to expect by analogy that these drugs would contract the vessels of the kidneys they not only do not contract but dilate them*,* while, like digitalin, helleboreine, adonidine, convallamareine, etc., in all other organs of the body they contract the blood-vessels.

Thomas Fraser has observed that strophanthine has not this power of causing contraction. I am not prepared to admit this; more observations must be made.

I believe that strophanthine, which I have myself prepared from genuine seeds, has an effect identical with digitalin, helleboreine, barium chloride, etc.,—namely, to contract the blood-vessels of all the organs of the body.

If the question be raised what significance in therapeutics the remarkable effects of these two† substances possess, we must reply that in cases where a prolonged and energetic secre-

tion by the kidneys is necessary in a patient suffering from hydrops, the result of impeded circulation, the contraction of all the blood-vessels of the periphery is of the greatest practical importance, so that the peripheral blood-channels may be narrowed and the rapidity of the circulation be enhanced through the increased functional capability of the heart (which has been clearly demonstrated by F. Williams,† of Boston), and as a result of the increased rapidity and activity of the circulation, both in the body at large and in the kidneys, the secretion of urine will be increased.

It is evident, however, that when in the kidney itself the blood-vessels are not only not contracted but slightly dilated, the secretion of urine will be still more abundant, inasmuch as the quantity of urine produced depends not only upon the rapidity of the renal circulation, but also upon the volume of blood present in the kidneys. The greater the volume of blood present, at least in the glomeruli and convoluted tubules, the greater the amount of urine which can be secreted. It is therefore evident that by means of the agent which produces contraction of the blood-vessels of the entire body the secretion of urine can be favorably influenced, until by

* After the use of very large doses it happens, as the tables show, that contraction follows the first effect, but this proves the more plainly that the previous dilatation was not an accident, but a result of the drug.

† Two other substances of this group, digitonin and digitin, I found to be without influence on the blood-vessels.

the removal of blood from the periphery the local anæmia of the kidneys can be remedied. While the action of the drug increases, the secretion of urine will lessen rather than continue to increase.

By the use of digitalis, in which, in addition to a substance which contracts all the vessels (digitalin), there are two others in considerable quantities which dilate the vessels (digitoxin and digitalein), we shall produce in a patient a continuous diuresis; for too great anæmia of the kidneys to permit of secretion can never occur. For these reasons are the leaves of digitalis purpurea an agent which through none of the many other vaso-motor remedies can be supplanted, for we are as yet ignorant of other remedies which act like digitoxin and digitalein. The importance of my statement, that digitalis medication has no substitute, every practitioner will admit. The substitution for digitalis of adonis, convallaria, etc., is not because digitalis does not affect the heart properly, but because digitalis often causes vomiting and purging in certain patients in whom the other drugs, adonis, convallaria, strophanthus, etc., do not produce such results. I have recommended barium chloride, not because it acts more powerfully than digitalis, but because it is cheap, is easily and persistently soluble, and produces no irritation when given subcutaneously.

What form of digitalis shall be employed? Most commonly preferred is the infusion. This naturally contains only those substances soluble in water. Of the three important active principles, as digitalein, a drug which produces dilatation of the vessels of the kidneys, is soluble in alcohol, it is contained in the tincture and alcoholic extract. The other constituents, digitoxin and digitalin, are also soluble in alcohol; in alcoholic preparations, as well as in the leaves themselves, we obtain the three important active principles.

In fluid extracts digitoxin is precipitated as an insoluble powder. Acetum digitalis (vinegar of digitalis) approaches the infusion most closely in regard to its contents. It is very desirable that fresh, well-dried leaves be used. When the leaves are imperfectly dried a species of fermentation may occur which may decompose the three essential components of the drug, for digitalin and digitalein are, like all glucosides, decomposable through foreign matter and fermentation. Digitoxin is, however, not a glucoside, but decomposes as easily and under the same circumstances as the others. The result of the decomposition of digitalis is not a substance producing

the desired effects upon the heart, but a resin, digitaliresin (from digitalein and digitalin) and toxiresin (from digitoxin). The effect of these bodies is a violent irritation of the convulsive centres of the brain; severe convulsions may also occur, as in poisoning with picrotoxine or cicuta verosa. Whenever the usual effects of digitalis are wanting, or instead cramps occur, we are safe in thinking that the preparation used was a poor one. The decomposition of digitalis may occur not only in the leaves, but also in infusions and solutions of digitalin and digitalein. As Tardieu* says, "The pure digitalin when suspended in water or dissolved undergoes decomposition in a short time, whereby the bitter taste is altered and, as an indication of a radical change in the constitution of the drug, gases form." Among my patients I have very often seen decomposition in preparations of digitalis which had stood two days in a room. This happens from the mixing of digitalis tincture with syrup or watery solution. The practice prevalent in America of not preparing the drug from the leaves when desired, but of using a concentrated infusion, explains the frequent disappointment in its use.

Post-mortem examinations in cases of poisoning by digitalis are reported, but in one case, observed by Cloetta,† was the distribution of the blood the one important phenomenon observed, and the vessels of the kidneys were found not only not contracted, but dilated. Such a post-mortem appearance is quite unintelligible, save in the light of our experiments on digitalein and digitoxin, for which it furnishes an excellent illustration.

ON LOCAL APPLICATIONS TO THE PROSTATE GLAND;

PARTICULARLY IN REFERENCE TO IMPOTENCY AND URINARY TROUBLES ARISING FROM DISEASE OF THAT ORGAN.

BY T. WILLIAMS, M.D., MILWAUKEE, WIS.

THERE are certain diseases of the prostate gland invested with a peculiar interest to all men, laymen as well as professional, owing to the fact that they are the frequent and often unsuspected source of

* Ambrose Tardieu, "Die Vergiftungen Autorisirt." German edition. Erlangen, 1868. Enke, p. 361.

† Cloetta, "Lehrbuch der Arzneimittellehre," 1883, II. Aufl., p. 217.

urinary troubles, as well as partial or complete sexual impotence in the male. The results of Sir Henry Thompson's researches on this subject, as given in his "Clinical Lectures on Diseases of the Urinary Organs," were that *one-third* of all men over fifty-five have some enlargement of the prostate. Enlargement of the prostate, in fact, is a disease almost peculiar to middle and advanced life, between fifty and sixty; but chronic irritability and inflammation are much more frequently met with between the ages of twenty-five and fifty.

The points of special clinical importance in reference to the anatomy of the prostate are, that when the finger is introduced into the rectum the healthy prostate is felt in the median line as a body about one and one-half inches long, and as broad as it is long, about one and one-half inches from the anus. The vesiculæ seminales lie beyond it, and the vasa efferentia, which convey the seminal fluid, open into that part of the urethra surrounded by the prostate. In all chronic urinary troubles the practitioner should not fail to make a digital examination of the prostate gland, as it will often yield information without which he could not successfully treat the affection.

The object of this paper being to call attention to the great value of local applications to the prostate, it is not proposed to deal fully with its various diseases. I shall, therefore, speak only of those to which this method of treatment is particularly applicable.

I wish to remark in the outset that the *remote* origin of more than one-half the cases of prostatic disease treated by me has been a previous neglected or improperly treated gonorrhœa. The patient may have had the gonorrhœa twenty or thirty years before that laid the foundation, or planted the predisposing cause, of the existing disease. In fact, I believe this also to be the most prolific source of generative weakness in middle life, as the urethra never seems to regain its virgin condition after a case of prolonged gonorrhœa.

HYPERTROPHY OF THE PROSTATE GLAND.

Chronic enlargement of the prostate may be a simple increase in the size of the gland from previous congestions due to frequent or long-continued sexual excitement, or previous inflammation; it may arise from scrofulous or tubercular deposits, from calcareous deposits in its substance, and finally from a new growth caused by an increased flow of blood to the parts. Each of these forms of enlarge-

ment is denoted by certain characteristics which usually enable us to diagnosticate them accurately. The degree of trouble arising from enlarged prostate depends very much upon its character. Thus, the lateral lobes may be greatly enlarged without causing much inconvenience for a long time; but if the middle lobe, forming the floor of the prostatic portion of the urethra, or that portion next to the bladder, is only slightly enlarged, difficulty in micturition is sure to follow. Thus, a simple hypertrophy, which usually affects the lateral lobes, may reach enormous proportions without giving rise to any particular symptoms; while, on the other hand, an enlargement of the middle lobe, which can scarcely be detected by the finger, may cause the most distressing trouble.

The symptoms which indicate enlargement are: difficulty in emptying the bladder, the urine escaping in driblets; there is a frequent desire to pass water, especially at nights and mornings; the character of the urine is usually unchanged, and there may be slight pain before passing it, but usually none afterwards. These are the early or premonitory signs of hypertrophy, and unless relieved increase in severity as the enlargement progresses. The patient reaches a stage where he finds it difficult to hold the water; the desire to pass it is imperative, and must be immediately attended to. This condition is produced by over-distention of the bladder, in which the urine accumulates on account of that viscus not being entirely emptied. From the same cause cystitis, or inflammation of the bladder, is liable to occur, and not only the bladder itself, but also the ureters, which convey the urine from the kidneys to the bladder, become dilated; and this in turn produces inflammation of the kidneys, winding up with Bright's disease.

Those suffering from chronic hypertrophy are liable to occasional attacks of *congestion of the prostate*. Congestion usually comes on suddenly, as a result of some indiscretion in diet or drinking, exposure to cold, or other apparently trivial cause. There is complete retention of urine, accompanied by bloody urine, an increased temperature, quick pulse, and more or less pain and uneasiness in the region of the bladder. If the urine is not speedily evacuated through the catheter, putrefaction ensues, the tongue becomes dry and covered with a brown coat, the pulse becomes faster and weaker, and the patient sinks into a typhoid condition, which may end fatally. Old men are more liable to these

attacks than young men. It is of the utmost importance to prevent putrefaction of the urine, by antiseptic treatment and catheterization, as this is the most frequent cause of death in such cases.

In the treatment of hypertrophy of the prostate, as Dr. Godlee says, "it is only necessary here to give two words of warning. First, that most of the evils resulting from this condition depend upon the fact *that the bladder is never emptied*; it is essential, therefore, that the patient's powers in this respect should be ascertained without delay by catheterization, and if it be discovered that a certain amount of residual urine remains, he should be taught to pass the instrument himself, and directed to do so at least once a day. Secondly, cystitis has often been caused by setting up putrefaction of the urine by a catheter not surgically clean; the simple precaution of lubricating it with carbolized oil prevents with certainty this catastrophe."

The general treatment, including the proper regulation of the patient's diet and habits, will suggest itself to every well-informed physician, and would be foreign to the scope of this paper. My object is to point out the peculiar advantages of *local applications to the prostate* with a view of effecting a radical cure. These advantages can scarcely be overestimated, as by the judicious employment of the proper remedies in this way there is but little question that Bright's disease and other complications which cut short many valuable lives may be averted. It is a well-known fact that the late Napoleon III. fell a victim to prostatic disease, originating many years previously in imprudent excesses of various kinds. Although (as in his case) the immediate cause of death may be some disease of the bladder, or a stone necessitating cutting, or, as in others, kidney-disease, these affections may be traced back to what was at first an apparently insignificant urinary trouble, arising from enlargement of the middle lobe of the prostate, which would have yielded readily to the proper local applications made directly to the prostate urethra.

The nature of these applications and the mode of making them will be referred to in connection with the treatment of chronic inflammation of the prostate. In all cases the local treatment should be combined and used in conjunction with such general treatment as the individual case may seem to require. I will only remark here that great relief and benefit will be experienced from the use of suppositories, properly medicated, and used

per rectum, as the suppository, when introduced, lies adjacent to the prostate gland, and the iodinated or other alterative ingredients with which it is medicated thus readily reach the gland, and supplement the applications made through the urethra. I have obtained excellent results from rectal suppositories of cocoa butter medicated with potas. iod., belladonna, iodoform, and hydrarg. pernit., in proper proportions, one being introduced every night at bedtime, in connection with the local applications.

CHRONIC PROSTATITIS AND ITS VARIOUS COMPLICATIONS.

Chronic Prostatitis, or chronic inflammation of the prostate gland, is one of the most frequent causes of urinary and sexual trouble met with in men between the ages of twenty-five and fifty. Its symptoms resemble those of stone in the bladder so closely that the busy or inattentive practitioner, who has paid no especial attention to the subject, is very liable to mistake the one for the other. These symptoms are: a frequent desire to urinate, with a feeling of weight and heat in the perineum, and a pain extending the whole length of the passage to the tip of the penis.

At times a few drops of blood will follow the water, and generally the patient suffers from frequent nocturnal emissions. The urine is cloudy, and deposits a muco-purulent mass after standing awhile. A rectal examination shows the prostate tender to the touch, and more or less enlarged. It is frequently met with in young and middle-aged men, as a sequel of a prolonged gonorrhœa which has involved the prostatic portion of the urethra. It is not an affection that yields very readily to any method of treatment, and in many cases which have come under my care it had gradually subsided into a mild but persistent chronic form, in which but little enlargement or tenderness of the prostate remained, but in which the gland had taken on a state of hyperæsthesia, and was engorged and irritable. In this condition there is always more or less complaint in regard to the urine, which feels hot, with a slight smarting or stinging sensation after passing; there is often a feeling as if the bladder was not entirely evacuated, which is true, as a very slight enlargement of the floor or middle portion of the gland, as previously remarked, interferes with the complete emptying of the bladder, and causes the last drops to dribble away after the stream of urine has ceased. This symptom is one

which should not be neglected by the practitioner; although it does not indicate that degree of enlargement which causes retention of urine in middle-aged and old men, it is the commencement of chronic hypertrophy, and will eventually lead to it unless relieved.

A still more frequent symptom of hyperæsthesia of the prostate is the oozing out of a thin, transparent discharge, which is increased by any sexual excitement. This discharge, mostly composed of prostatic mucus, is not only very annoying but often alarms the patient, who mistakes it for semen. Seminal fluid, it is true, may be mixed with it, and often is, when the individual has experienced prolonged sexual excitement, or gone to any excess of this kind; but it is a mistake to suppose that the entire discharge is spermatic. The form of excitement referred to above, more especially if it has been unattended by gratification, is, according to my own observations, one of the principal causes of chronic hyperæsthesia of the prostate. We can readily understand how this can be when we consider that always during erotic excitement the prostate gland becomes congested with blood; the copious plexus of veins which surround it communicate freely with those of the vesiculæ seminales, penis, and testicles, and connect not only with the systemic, but also with the portal circulation. In fact, in those who give way to erotic ideas, the prostate is kept congested, although there may be no erection of the penis. The symptoms referred to are always aggravated by exercise, and in cases following chronic gonorrhœa the discharge assumes a gleety character; only a drop may be detected in the morning, but the quantity may be so increased after any excess as to resemble a regular case of gonorrhœa.

In young men, especially those of nervous and excitable temperaments, the most alarming of these symptoms is true spermatorrhœa, with frequent nocturnal emissions and seminal losses in the urine and at stool. In many cases which have come under my treatment these debilitating losses occurred nightly, and sometimes even two and three times during the night, in consequence of the reflex action of the prostatic irritation upon the vesiculæ seminales. So great does the dread of these repeated emissions become that young men have told me that they actually felt reluctant to go to bed. Neither the antaphrodisiacs nor the nerve-tonics seem to arrest or materially modify spermatorrhœa caused by chronic inflammation of the prostate. Every prac-

titioner knows from repeated failures how unsatisfactory all the usual modes of treatment are in these cases. Many, indeed, can hardly realize that the trouble is as serious as the patient's sufferings would indicate, and are inclined to attribute much of it to undue anxiety and worry on his part.

TREATMENT OF DISEASES OF THE PROSTATE BY LOCAL APPLICATIONS.

In the treatment of diseases of the prostate gland, I have obtained the most satisfactory results by the local application of medicaments directly to the prostatic portion of the urethra. I am inclined to believe that the astonishing and almost incredible results claimed by M. Lallemande for the *porte caustique* in spermatorrhœa and in impotence were due more to the direct antiphlogistic action exerted upon the prostate than to any special effects of the cautery upon the spermatic ducts. Practical experience has demonstrated that the use of escharotics for this purpose should be discouraged on account of their liability to leave hardened cicatrices, which interfere with the normal functions of the organs. If something of this character is indicated in the case, it is much less objectionable to employ the hydrarg. pernit. in the form of an ointment. Of the great number of cases, however, that have been under my care, very few required caustic applications. In the greater number I have found alterative and sedative applications, such as hydrarg. bichlor., iodoform, belladonna, ergotin, and cocaine muriat., meet every indication. It would be impossible, however, to lay down any strict inflexible formula for any therapeutic agent or combination that could be used indiscriminately. Nearly every case of prostatic disease, whatever its character may be, is "a law unto itself," and the particular therapeutic agent or combination suited to it must be governed by the pathological condition of the gland as developed by digital examination. But whatever remedy is indicated, it should always be applied in the form of an ointment, as comminution renders absorption easier.

In my own practice I have for a great many years applied ointments in this way with the most gratifying results. I employ the *porte caustique* of Lallemande, charging the cup of the projecting part with the particular ointment decided on for the case, instead of the silver nitrate. Passing the canula down the passage to the prostatic portion of the urethra, I project the cup containing the ointment, and allow it to remain usually about five min-

utes, turning it around occasionally during that time. I then withdraw the instrument, and the patient goes about his business, as the operation causes no suffering, and only a slight smarting, which passes off in a few minutes. I repeat these operations about once a week, sometimes twice, and it is seldom necessary to continue them longer than from six to twelve weeks. The effect is not only gratifying, but immediate. Patient and physician are not discouraged by waiting too long for tangible results. I have often had patients apply for treatment who had been under the care of physicians of unquestionable skill for months without appreciable benefit. In some of these cases nocturnal emissions occurred five or six times a week, and even oftener; in others almost complete impotency existed, the intromittent organ seeming as if paralyzed; in nearly all there was more or less trouble of one kind or another with the urine. Yet frequently a single application to the prostate has made a marked change, reducing the frequency of the emissions from four to six a week to once, increasing the tone of the parts, increasing erectile vigor, or materially lessening the urinary trouble, as the case might be.

There is one point in this connection to which I wish to call especial attention. The subcutaneous injection of ergot at the root of the penis for restoring erectile power, as recommended by Bartholow, is seldom practicable, and nearly always renders the part sore. The application of this remedy to the prostate, as I have described, is not only more effectual in cases of impotency on account of absence of erection, but attended by none of the objections to its use as a subcutaneous injection. I have frequently verified the correctness of this statement by incorporating it with whatever ointment I might be applying to the prostate in middle-aged and old men. Impotency, according to my experience, in middle life is oftener due to disease of the prostate than to failure of the generative functions.

A case in point was that of a gentleman of sixty, wounded on one of the gunboats in the attack on Fort Donelson, which battle gave me my first experience in practical surgery. This gentleman had received a gunshot wound in the loins, and as I found his bladder enormously distended from retention, I at first supposed that the spinal nerve-centre had been injured by the shot. But in attempting to pass the catheter I was obliged to insert a finger in the rectum to guide it, and noticed

that the prostate gland was very much enlarged. On questioning him, I discovered that he had been subject to attacks of retention of urine from congestion of the prostate for two or three years, and for a still longer period had lost the power of erection almost entirely, although the seminal secretion appeared to be abundant. It chanced that the only lubricant on hand for the catheter was a small wooden box of ointment, a compound of hydrarg. bichlor. cum belladon. et ext. ergotæ, which I had been using as a dressing for scrofulous ulcers on the legs of a patient at St. Mary's Hospital at Cincinnati, and which I had carried down to Fort Donelson in my coat-pocket. I used it on the catheter in the old gentleman's case simply because it was the only thing I had to oil it with, and without stopping to think much about it. Circumstances were such that he remained under my observation while recovering from the wound in the back, and, at his solicitation, I used the preparation several times afterwards on the catheter with which I drew his water, as it seemed to relieve the feeling of fulness in the rectum of which he complained, and enabled him to pass water with greater ease. A year later this gentleman visited me at Louisville, where I was then located, for the purpose of being catheterized, not so much on account of the difficulty in passing water, which, he stated, was measurably relieved, but to secure the use of a similar ointment to that formerly used. He informed me that not only was the prostatic trouble much better, but that nearly normal erections had returned. I continued the applications, using the *porte caustique* instead of the catheter, for some three or four months with such marked benefit that my patient, who was a widower, got married some six months later.

I merely mention this incident to show how we sometimes stumble upon important discoveries through the merest accident. Although there was nothing particularly novel in this method of treatment, it was new to me at that time, and even now the treatment of disease of the prostate by means of medicaments applied directly to the prostatic portion of the urethra has not received that patient investigation which its merits deserve. Some physicians do not seem to recognize the source of prostatic trouble. I have met with many cases in which the senseless operation of splitting up the meatus had been performed for urinary derangement due to an enlarged prostate.

In conclusion, I will add that my practice

for the past twenty years has been such as to bring me in contact with numerous cases of prostatic disease. In most of these cases the patients did not suspect that they were laboring under any prostatic affection, but applied for treatment either on account of spermatorrhœa, loss of sexual power, or urinary trouble. I have in many cases found it difficult to convince them that the source of trouble was in the prostate gland. Some, indeed, could not be convinced, having formed a theory of their own, derived from pernicious quack publications, and they of course were lost. But whenever the patient has had the strength of will, and, above all, the confidence in advice, to adhere faithfully to the treatment which I have here indicated, the relief has been as gratifying as it was marked and unexpected.

It is not by any means to be understood that these local applications are the only treatment required in such cases. They all require general treatment according to the indications pre-ent in each case, but the object of this paper is to emphasize the value and importance of local applications to the prostate, and it would extend it much beyond the original limits imposed upon it to enter into a discussion of the general management and medical treatment of these diseases, which I have considered at some length in a former monograph.

There is the same necessity for alterative treatment, renal resolvents, general and special nerve-tonics, and restorative medication, according to the individual peculiarities of each case, and the age and general physical condition of the patient. Local applications are not intended to supplant any of the usual means employed for anchoring frail humanity to earth awhile longer, but they supplement, aid, and assist them, and materially increase their efficacy and success, and render the results of our treatment more satisfactory and relief more certain and speedy.

Finally, medical practitioners should impress the fact upon their patients that the first serious indication of prostatic disease is some imperfection in the act of micturition, and *whenever any trouble is experienced in passing water for any considerable length of time, suspect disease of the prostate gland.*

189 WISCONSIN STREET.

THE ANTIPYRETIC ACTION OF ANTIFEBRIN.

BY DR. E. W. EVANS, EASTON, PENNA.
(From the private laboratory of Dr. Ott.)

PART II.—ON THE FEVERED ANIMAL.

SINCE the publication of Part I. in the April number of this journal, I have made the following experiments in order to observe the action of antifebrin in the presence of a pyrogenic agent, deutero-albumose being employed, it having been demonstrated by Ott and Collmar* that the albumoses and peptones were active heat-producing agents, the fever setting in at the end of the first half-hour and continuing for about three hours. The dose used by them being from .015 to .020 gramme.

In all of my experiments I have not used less than this, and in some cases more, getting a rise in all of from $.5^{\circ}$ to 1.4° in the first hour after injection into the jugular. And at the end of the hour, when the fever was still on the incline, the antifebrin was given in the same manner, and the animal replaced in the chamber of the calorimeter.

These experiments are certainly significant in the uniformity of their results, as will be shown, there being not a single case in which there was not a reduction both in the production and the dissipation of heat, although the doses of the pyrogenic and the antipyretic agents varied greatly.

Experiment 1.—Rabbit; weight, 1.88 pounds.

P. M.
2.30 .020 gramme of deutero-albumose injected into jugular; rectal temp. at time of injection 101.6° .

Time. P. M.	Rec. temp.	Cal. temp.
3.42	102.4°	70.55°
4.42	102.6°	70.71°
		$.16^{\circ}$

5.00 .00375 gramme of antifebrin injected into jugular.

Time. P. M.	Rec. temp.	Cal temp.
5.10	102.4°	71.35°
6.10	102.8°	71.47°
		$.12^{\circ}$

RESULTS.

Hourly heat after dissipation deutero-albumose.....	4.88
Hourly heat production after deutero-albumose.....	5.19
Hourly heat dissipation after antifebrin.....	2.79
Hourly heat production after antifebrin.....	3.41

* "Albumose and Peptone Fever," *Medical News*, February 19, 1887.

SUMMARY.

Hourly heat dissipation after deuterio-albumose.....	4.88
Hourly heat dissipation after antifebrin.....	2.79
Loss in heat dissipation.....	2.09
Hourly heat production after deuterio-albumose.....	5.19
Hourly heat production after antifebrin.....	3.41
Loss in heat production.....	1.78

Experiment 2.—Rabbit; weight, 4.52 pounds.

P.M.

2.10 .02 gramme deuterio-albumose injected into jugular; rect. temp. 101.2°.

Time. P.M.	Rec. temp.	Cal. temp.
2.42	101.6°	68.14°
3.42	102.6°	68.85°
		.71°

.55 gramme of antifebrin injected into jugular.

Time. P.M.	Rec. temp.	Cal. temp.
4.10	100°	68.85°
5.10	99.8°	69.15°
		.30°

RESULTS.

Hourly heat dissipation after deuterio-albumose...	30.11
Hourly heat production after deuterio-albumose...	33.86
Hourly heat dissipation after antifebrin.....	12.62
Hourly heat production after antifebrin.....	11.87

SUMMARY.

Hourly heat dissipation after deuterio-albumose ...	30.11
Hourly heat dissipation after antifebrin.....	12.62
Loss in heat dissipation	17.49
Hourly heat production after deuterio-albumose...	33.86
Hourly heat production after antifebrin.....	11.87
Loss in heat production.....	21.99

Experiment 3.—Rabbit; weight, 4.28 pounds.

P.M.

2.30 .02 gramme deuterio-albumose injected into jugular; rect. temp. 101.6°.

Time. P.M.	Rec. temp.	Cal. temp.
2.52	101.8°	66.76°
3.52	102.5°	67.66°
		.90°

.45 gramme of antifebrin injected into jugular.

Time. P.M.	Rec. temp.	Cal. temp.
4.12	101.6°	67.79°
5.12	100.8°	68.44°
		.65°

RESULTS.

Hourly heat dissipation after deuterio-albumose...	38.10
Hourly heat production after deuterio-albumose...	40.59
Hourly heat dissipation after antifebrin.....	27.37
Hourly heat production after antifebrin.....	24.52

SUMMARY.

Hourly heat dissipation after deuterio-albumose...	38.10
Hourly heat dissipation after antifebrin.....	27.52
Loss in heat dissipation.....	10.58
Hourly heat production after deuterio-albumose...	40.59
Hourly heat production after antifebrin.....	24.52
Loss in heat production.....	16.07

Experiment 4.—Rabbit; weight, 3.42 pounds.

P.M.

2.00 .04 gramme deuterio-albumose injected into jugular; rect. temp. 101.6°.

Time. P.M.	Rec. temp.	Cal. temp.
2.40	102.2°	70.50°
3.40	102.6°	71.00°
		.50°

.15 gramme of antifebrin injected into jugular.

Time. P.M.	Rec. temp.	Cal. temp.
4.07	101.2°	71.05°
5.07	101.8°	71.35°
		.30°

RESULTS.

Hourly heat dissipation after deuterio-albumose...	20.56
Hourly heat production after deuterio-albumose...	21.70
Hourly heat dissipation after antifebrin.....	12.53
Hourly heat production after antifebrin.....	14.24

SUMMARY.

Hourly heat dissipation after deuterio-albumose ...	20.56
Hourly heat dissipation after antifebrin.....	12.53
Loss in heat dissipation.....	8.03
Hourly heat production after deuterio-albumose...	21.70
Hourly heat production after antifebrin.....	14.24
Loss in heat production.....	7.46

Experiment 5.—Rabbit; weight, 3.74 pounds.

P.M.

1.45 .04 gramme deuterio-albumose injected; rect. temp. 102.6°.

Time. P.M.	Rec. temp.	Cal. temp.
2.25	102.8°	67.85°
3.25	103.1°	68.65°
		.80°

.2 gramme of antifebrin injected into jugular.

Time. P.M.	Rec. temp.	Cal. temp.
3.40	101.1°	68.70°
4.40	100.1°	69.15°
		.45°

RESULTS.

Hourly heat dissipation after deuterio-albumose...	33.34
Hourly heat production after deuterio-albumose...	34.27
Hourly heat dissipation after antifebrin.....	18.66
Hourly heat production after antifebrin.....	15.55

SUMMARY.

Hourly heat dissipation after deutero-albumose....	33.34
Hourly heat dissipation after antifebrin.....	18.66
Loss in heat dissipation.....	14.68
Hourly heat production after deutero-albumose...	34.27
Hourly heat production after antifebrin.....	15.55
Loss in heat production.....	18.72

Experiment 6.—Rabbit; weight, 3.80 pounds.

P.M.

1.45 .05 gramme deutero-albumose injected into jugular; rect. temp. 101.9°.

Time. P.M.	Rec. temp.	Cal. temp.
2.27	102.3°	67.09°
3.27	103.2°	67.69°
		.60°

.2 gramme of antifebrin injected into jugular.

Time. P.M.	Rec. temp.	Cal. temp.
3.52	101.2°	67.79°
4.52	101.2°	68.29°
		.50°

RESULTS.

Hourly heat dissipation after deutero-albumose...	25.13
Hourly heat production after deutero-albumose....	27.97
Hourly heat dissipation after antifebrin.....	20.83
Hourly heat production after antifebrin.....	20.83

SUMMARY.

Hourly heat dissipation after deutero-albumose....	25.13
Hourly heat dissipation after antifebrin.....	20.83
Loss in heat dissipation	5.30
Hourly heat production after deutero-albumose ...	27.97
Hourly heat production after antifebrin.....	20.83
Loss in heat production.....	7.14

Upon reviewing the results of these experiments, as collected in the table, the

PLATE II.

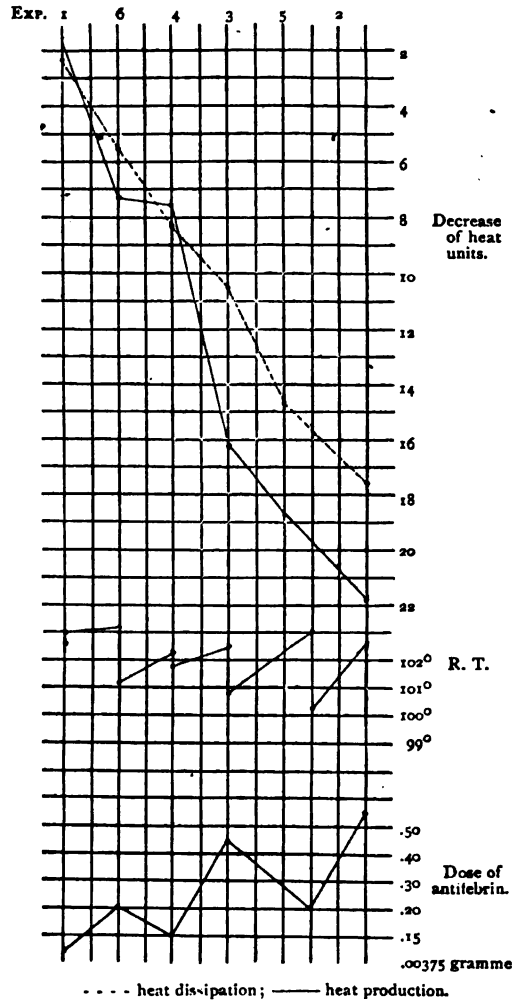


PLATE II.—The dotted line shows heat dissipation and the straight line heat production; the curves below the zero line, which is the normal line, represent so many units of decrease in heat production and heat dissipation after the use of the antifebrin.

The dose and temperature curves are below. Thus, in Experiment 3, the dose is .45 gramme, heat production and heat dissipation are diminished, and the temperature fell from 102.5° to 100.8°.

Table No. 3.—Antifebrin Experiments on Fevered Animals.

Experiment.	Duration.	Weight of animal.	Dose of antifebrin.	Hourly heat dissipation.				Hourly heat production.			
				After deutero-albumose.	After antifebrin.	Decrease.	Increase.	After deutero-albumose.	After antifebrin.	Decrease.	Increase.
	Hrs.	Pounds.	Grams.								
1	2	1.88	.00375	4.88	2.79	2.09	.....	5.19	3.41	1.78	.....
2	2	4.52	.55	30.11	12.62	17.49	.....	33.86	11.87	21.99	.....
3	2	4.28	.45	38.10	27.52	10.58	.....	40.59	24.52	16.07	.....
4	2	3.42	.15	20.56	12.53	8.03	.....	21.70	14.24	7.46	.....
5	2	3.74	.20	33.34	18.66	14.68	.....	34.27	15.55	18.72	.....
6	2	3.80	.20	25.13	20.83	5.30	.....	27.97	20.83	7.14	.....

uniformity previously spoken of becomes quite evident. But perhaps the accompanying plate, where I have arranged the curves of heat production and heat dissipation in direct relation to the temperature and the dose exhibited, may show it still more clearly.

In the calorimeter experiments made with albumoses by Ott and Collmar it was determined that the fever obtained was produced by an increase of heat production and a decrease in heat dissipation. In my experiments the temperature reduction, which occurred in

two-thirds of them, was due to the great decrease of heat production in excess of the accompanying decrease in heat dissipation; since in the two experiments where the temperature continued to rise after the antifebrin had been injected, the reduction of heat production was small in comparison with the reduction in heat dissipation.

In most of these experiments, particularly when large doses had been given, a peculiar cyanotic condition of the ears appeared shortly after the administration of the antifebrin.

Upon analysis of the blood in these cases with the Sorby-Browning micro-spectroscope, the third band of methæmoglobin was distinctly seen. The drug evidently alters the coloring-matter of the blood, progressively changing and reducing the oxyhæmoglobin to methæmoglobin.

This cyanosis has also been frequently noticed by many observers in the clinical application of the drug.

In conclusion, it is evident that acetanilide is a powerful, safe, and certain antithermic agent, and that its antipyretic effect in fever is due to the reduction it causes in the amount of heat produced; whether by direct stimulation of the inhibitory heat centre, paresis of the spinal heat centres, or by an action on the tissues themselves, remains to be demonstrated.

THE INFLUENCE OF ANTIFEBRIN, SALICYLIC ACID, AND CARBOLIC ACID ON NORMAL AND ABNORMAL BODILY TEMPERATURE.

By H. A. HARE, M.D. (UNIV. OF PA.).*

SOME months since there appeared in the GAZETTE quite a lengthy study on fever, and the agents which produced and combated it, by Dr. Wood, Dr. Reichert, and myself, and the following series of experiments may in a manner be considered as a continuation of the former ones.†

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† For the manner in which fever was produced, and any other details concerning the methods of this research, the writer must refer to the paper just mentioned.

The writer desires to call attention to the statement made in this joint paper that a thermogenic substance in the pepsin was a pepsin-peptone, as his researches make this somewhat doubtful. He has found that certain commercial pepsins charged with peptone fail absolutely to produce increase in bodily temperature, but, on the contrary, decrease it. This is of course in accord with

At the time these experiments were begun no calorimetrical investigations as to the manner in which these agents act had been performed, and it is only within the last few weeks that a short but elaborate paper has appeared in this journal on the influence of antifebrin on bodily heat by Dr. Evans, of Easton, Pa. With the exception of this last-named investigation the profession possesses the results of no true calorimetrical observations on these three constantly used drugs, and it was this dearth of information which provoked these experiments.

The objects of the research have been, therefore, as follows:

First.—To determine the effect of each drug on normal temperature in the animal, which was free to come and go as it chose.

Second.—To discover what changes came about in the circulation during the alterations in the normal bodily temperature.

Third.—To determine what changes in the circulation occurred when the drug was influencing bodily temperature above normal.

Fourth.—To study in what manner these changes in temperature were produced, both with and without fever, or, in other words, whether these agents reduced bodily heat by altering heat production or dissipation, or both.

I. ANTIFEBRIN.

I have made ten experiments on the influence of antifebrin on normal rectal temperature, which show that this drug possesses to a marked degree the power of reducing bodily heat when no fever is present. In every instance there followed after the injection of the drug a very considerable fall, in some cases amounting to more than a degree Fahrenheit.

The following experiments, which agree in all respects with the others made on this point, will serve as examples:

Experiment 1.—Rabbit; weight, 2½ pounds.

Time.	Drug.	Rec. temp.
A M.		
11.05	.....	102½°
11.07	½ gr.	.....

the well-known fact that the commercial peptone of Grûbler decreases animal temperature. It is plain that if the fever-producing agent really is a peptone, there must be two peptones in the commercial article, one of which decreases and the other increases bodily temperature. The relations of peptones to albumoses is so exceedingly close that it is quite probable that the so-called pepsin-peptone may be an albumose.

Time. P.M.	Drug.	Rec. temp.	Remarks.
11.27	102°	
11.47	101°	Animal very quiet.
12.07	101 $\frac{3}{4}$ °	Animal brisk as ever.
12.27	101 $\frac{3}{4}$ °	
12.47	101 $\frac{3}{4}$ °	
1.07	103°	

Experiment 2.—Rabbit; weight, 2 $\frac{1}{4}$ pounds.

Time. P.M.	Drug.	Rec. temp.
1.13	103°
1.15	$\frac{1}{2}$ gr.	.....
1.35	101 $\frac{3}{4}$ °
1.55	100 $\frac{3}{4}$ °
2.15	101 $\frac{3}{4}$ °
2.35	101 $\frac{3}{4}$ °
2.55	102°
3.15	102 $\frac{3}{4}$ °

Experiment 3.—Rabbit; weight, 2 pounds.

Time. P.M.	Drug.	Rec. temp.
1.05	102 $\frac{3}{4}$ °
1.07	$\frac{1}{2}$ gr.	... ..
1.27	101°
1.47	101°
2.07	101 $\frac{3}{4}$ °
2.27	102°
2.47	102 $\frac{3}{4}$ °
3.07	102°

On studying the influence of antifebrin on bodily temperature and its relations to arterial pressure, we find that under normal conditions it generally produces a fall of temperature and a fall of pressure; but this is not by any means a constant action of the drug, since in Experiment 6 we see that though the temperature was decreased there was not a fall, but a rise of arterial pressure. This one exception would have but little weight against the others were it not that the fall of arterial pressure, when it did occur in the others, was not steady, but interrupted by temporary and unexplained rises; in other words, pressure and temperature did not fall side by side. Notwithstanding this fact, however, it is a just and proper conclusion that antifebrin in

producing a lowering of temperature also acts as an arterial sedative.

Just here it may be well to call attention to the action which the drug possessed in Experiment 7, namely, causing sudden cardiac failure from an unknown cause. In this experiment the animal died suddenly, so suddenly that the arterial pressure fell to zero from a considerable height in ten or fifteen seconds.

Death came without a tremor, a gasp, or any sign of an approaching cardiac failure.

On making an autopsy a small clot was found in the left ventricle, and there was also a long, well-formed clot extending from the canula in the carotid to the innominate artery.

The death was evidently due to this cause.

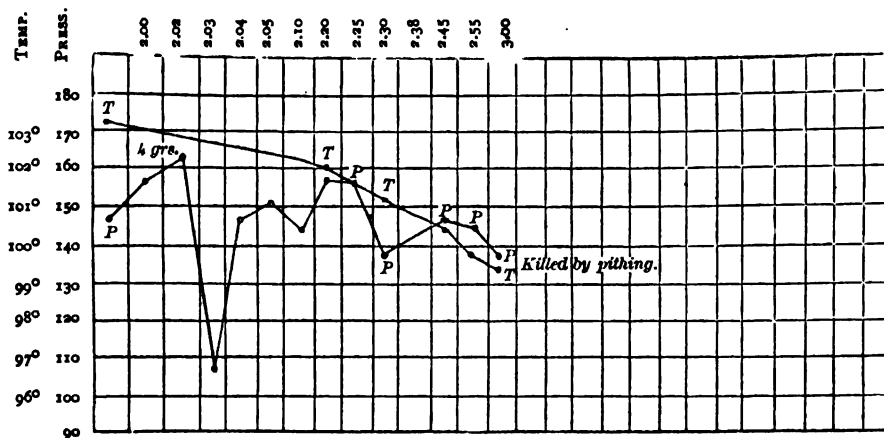
When antifebrin is injected into the jugular vein in an animal suffering from the pepsin fever it apparently has little, if any, effect on the pyretic condition, and both temperature and pressure mount upwards as if free from any inhibiting influence. This is the more remarkable since we have already discovered that this drug depresses normal temperature, but it may be that it is not able to cope with systemic changes produced by the pepsin. A glance at the charts will show this statement to be a fact, and we will now pass on to a consideration of its action on the production and dissipation of heat, hoping thereby to discover some cause for this rather remarkable result, for, as is well known, most drugs which depress normal temperature possess still greater powers over abnormal temperature.

From the experiments on heat production and dissipation in the normal animal we are able to draw the following conclusions, viz., that this drug reduces bodily temperature both by increasing dissipation and decreasing production. (See Experiments 12, 13, 14, and 15.)

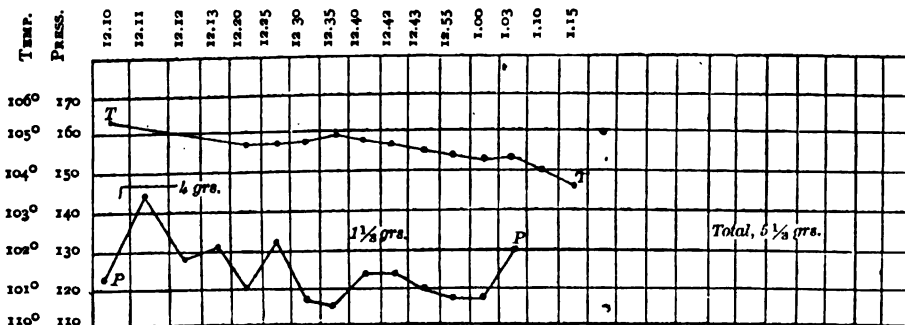
By the above the writer does not mean to insinuate that antifebrin decreases temperature by a double action necessarily in any one case, but rather that in one case the temperature is decreased by increased dissipation, and in another by decreased production.

Charts showing Arterial Pressure and its Relationship to Temperature, also the Fall of Temperature produced by Antifebrin.

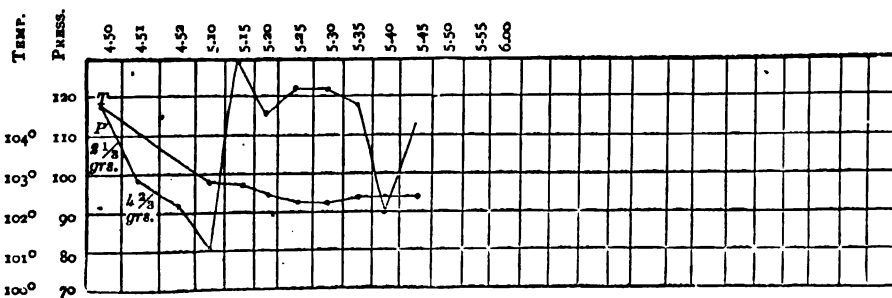
Experiment 4.—Dog; weight, 13 pounds.



Experiment 5.—Dog; weight, 32 pounds.

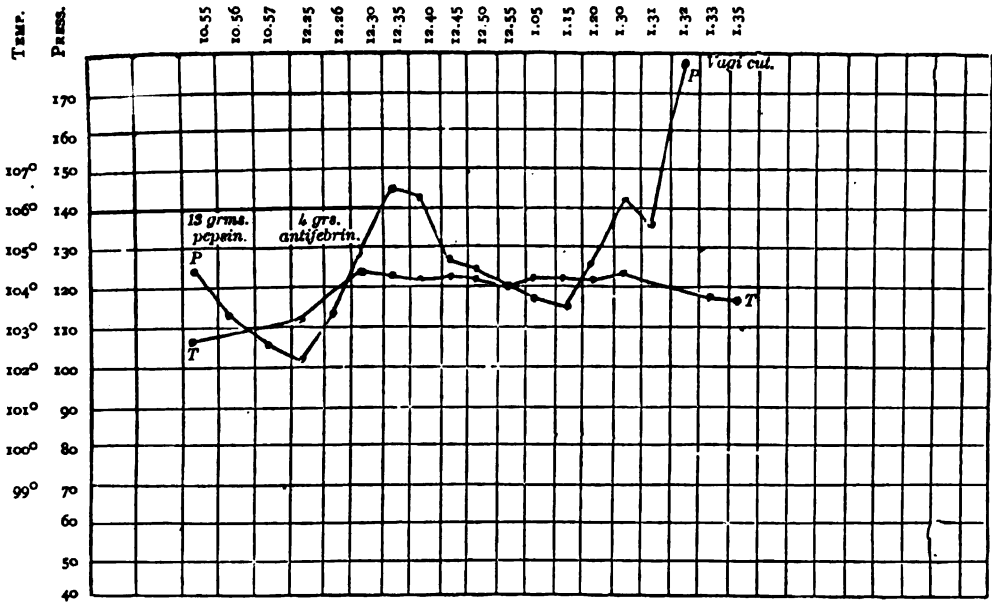


Experiment 6.—Dog; weight, 35 pounds.

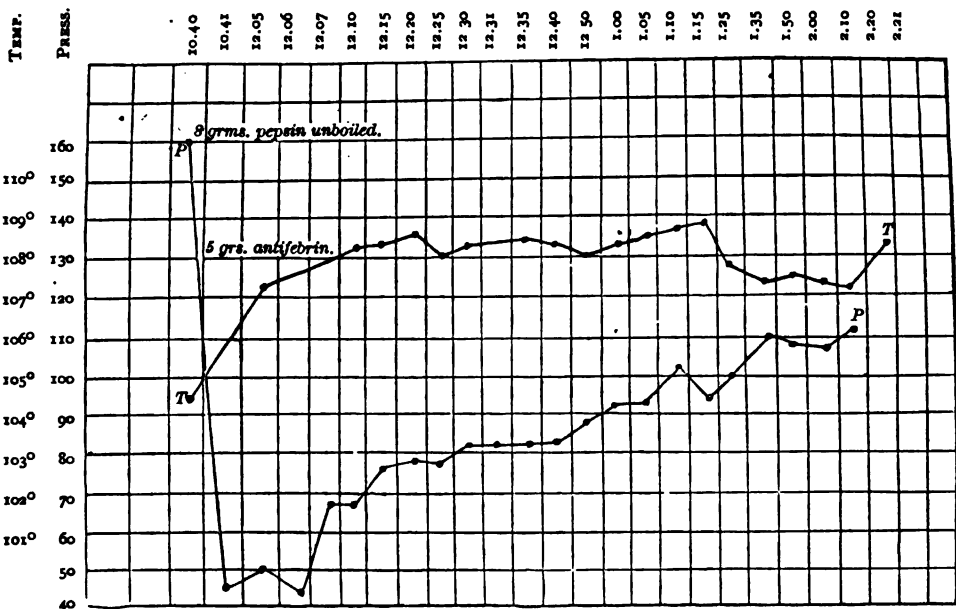


Charts showing Arterial Pressure and its Relationship to Temperature, also the Fall of Temperature produced by Antifebrin in "Pepsin Fever."

Experiment 8.—Dog ; weight, 30 pounds.



Experiment 9.—Dog ; weight, 36 pounds.



Experiment 12.—Dog; weight, 22 pounds.

Time. A.M.	Rec. temp.	Box temp.
9.00	105.30°	51.60°
10.00	.....	53.05°
11.00	105.25°	54.50°
	.05°	2.90°
11.15	6 grs. antifebrin into jugular.	
11.15	104.25°	54.55°
12.15	.....	56.15°
1.15	104.20°	57.05°
	.05°	2.50°

Hourly dissipation of heat before drug..... 176.9000
 Hourly production of heat before drug..... 176.4875
 Hourly dissipation of heat after drug..... 152.5000
 Hourly production of heat after drug..... 152.0125

SUMMARY.

Hourly dissipation of heat before drug..... 176.900
 Hourly dissipation of heat after drug..... 152.500

Hourly loss of heat dissipation after drug. 24.400

Hourly production of heat before drug..... 176.4875
 Hourly production of heat after drug..... 152.0125

Hourly loss of heat production after drug. 24.4750

Result.—Loss of both dissipation and production, the latter being more decreased than the former.

Experiment 13.—Dog; weight, 36 pounds.

Time. P.M.	Rec. temp.	Box temp.
1.20	102.7°	59.15°
2.20	.....	.....
3.20	103.0°	62.00°
	.3°	2.85°
3.30	6 grs. antifebrin into jugular.	
4.00	102.5°	62.25°
5.00	.....	64.05°
6.00	102.7°	65.80°
	.2°	3.55°

Hourly dissipation of heat before drug..... 173.850
 Hourly production of heat before drug..... 177.900
 Hourly dissipation of heat after drug..... 216.550
 Hourly production of heat after drug..... 219.250

SUMMARY.

Hourly dissipation of heat before drug..... 173.850
 Hourly dissipation of heat after drug..... 216.550

Hourly gain of dissipation after drug.... 42.700

Hourly production of heat before drug..... 177.900
 Hourly production of heat after drug..... 219.250

Hourly gain of production after drug.... 41.350

Result.—Gain of both dissipation and production, the former being more increased than the latter.

Experiment 14.—Dog; weight, 17 pounds.

Time. A.M.	Rec. temp.	Box temp.
10.25	103.0°	61.55°
11.25	104.2°	62.20°
	1.2°	.65°
11.35	6 grs. antifebrin into jugular.	
11.45	103.4°	62.15°
12.45	104.3°	63.30°
	.9°	1.15°

Hourly dissipation of heat before drug..... 79.300
 Hourly production of heat before drug..... 94.600
 Hourly dissipation of heat after drug..... 140.300
 Hourly production of heat after drug..... 151.775

SUMMARY.

Hourly dissipation of heat before drug..... 79.300
 Hourly dissipation of heat after drug..... 140.300

Hourly gain of dissipation after drug.... 61.000

Hourly production of heat before drug..... 94.600
 Hourly production of heat after drug..... 151.775

Hourly gain of production after drug.... 57.175

Result.—Gain of both dissipation and production, the former being greater than the latter.

Experiment 15.—Dog; weight, 20¼ pounds.

Time. P.M.	Rec. temp.	Box temp.
12.53	103.7°	63.25°
1.53	104.5°	64.25°
	.8°	1.00°
2.00	6 grs. antifebrin into jugular.	
2.10	103.7°	64.25°
3.10	104.9°	65.15°
	1.2°	.90°

Hourly dissipation of heat before drug..... 122.000
 Hourly production of heat before drug..... 134.156
 Hourly dissipation of heat after drug..... 109.800
 Hourly production of heat after drug..... 128.025

SUMMARY.

Hourly dissipation of heat before drug..... 122.000
 Hourly dissipation of heat after drug..... 109.800

Hourly loss of dissipation after drug... 12.200

Hourly production of heat before drug..... 134.1500
 Hourly production of heat after drug..... 128.0250

Hourly loss of production after drug... 6.1250

Result.—Loss of both dissipation and production, the former being more affected than the latter.

Experiment 16.—Dog; weight, 19 pounds.

Time. A.M.	Rec. temp.	Box temp.
10.20	104.6°	64.60°
11.20	104.8°	65.85°
	.2°	1.25°
11.25	6 grs. of antifebrin.	
11.30	104.3°	65.65°
12.30	105.0°	66.90°
	.7	1.25°

Hourly dissipation of heat.....	152.500
Hourly production of heat	155.350
Hourly dissipation of heat after drug.....	152.500
Hourly production of heat after drug.....	162.475

SUMMARY.

Hourly dissipation of heat before drug.....	152.500
Hourly dissipation of heat after drug.....	152.500

Hourly dissipation after drug unchanged.

Hourly production of heat before drug.....	155.350
Hourly production of heat after drug.....	162.475

Hourly gain of production after drug.... 7.125

Result.—Dissipation not affected, but production increased.

The influence of antifebrin and thermogenesis during fever seems to consist in a lessened amount of heat production and also an increased heat dissipation on some occasions.

Experiment 17.—Dog; weight, 17½ pounds.

10.40 Rec. temp. 103°. Injected 2 grs. pepsin.

Time.	Rec. temp.	Box temp.
A.M.		
11.10	105.3°	65.30°
12.10	105.0°	66.30°
	.3°	1.00°
12.13	6 grs. of antifebrin into jugular.	
12.15	105°	66.20°
1.15	102°	67.00°
	3°	.80°

Hourly dissipation of heat.....	122.0000
Hourly production of heat.....	119.0625
Hourly dissipation after drug	97.6000
Hourly production after drug.....	58.2250

SUMMARY.

Hourly dissipation before drug.....	122.0000
Hourly dissipation after drug	97.6000

Hourly loss of dissipation after drug... 25.4000

Hourly production of heat before drug.....	119.0625
Hourly production of heat after drug.....	58.2250

Hourly loss of production after drug... 60.8375

Result.—Loss of production and dissipation, the former being most affected.

Experiment 18.—Dog; weight, 28½ pounds.

12.20 Rec. temp. 102.5°. Injected 2 grs. filtered pepsin.

Time.	Rec. temp.	Box temp.
P.M.		
1.20	105.3°	67.00°
2.20	105.2°	68.10°
	.1°	1.10°

2.35 8 grs. antifebrin into jugular.

Time.	Rec. temp.	Box temp.
P.M.		
2.45	105.3°	68.15°
3.45	105.1°	68.95°
	.2°	.80°

Hourly dissipation of heat.....	134.200
Hourly production of heat.....	132.070

Hourly dissipation of heat after drug.....	97.600
Hourly production of heat after drug	93.330

SUMMARY.

Hourly dissipation before drug.....	134.200
Hourly dissipation after drug.....	97.600

Hourly loss in dissipation after drug.... 36.600

Hourly production of heat before drug.....	132.070
Hourly production of heat after drug.....	93.330

Hourly loss in production after drug.... 38.740

Result.—Loss of both functions, production being most decreased.

Experiment 19.—Dog; weight, 18½ pounds.

3.00 Rec. temp. 103.3°. Injected 2 grs. filtered pepsin.

Time.	Rec. temp.	Box temp.
P.M.		
3.50	104.8°	68.75°
4.50	105.1°	69.20°
	.3°	.45°

4.53 6 grs. of antifebrin into jugular.

4.55	105°	69.00°
5.55	104°	69.70°
	1°	.70°

Hourly dissipation of heat.....	54.9000
Hourly production of heat.....	59.0625
Hourly dissipation after drug.....	85.4000
Hourly production after drug.....	71.5250

SUMMARY.

Hourly dissipation of heat before drug.....	54.9000
Hourly dissipation of heat after drug.....	85.4000

Hourly gain of dissipation..... 30.5000

Hourly production of heat before drug.....	59.0625
Hourly production of heat after drug.....	71.5250

Hourly gain of production after drug... 12.4625

Result.—Gain of both functions, chiefly of dissipation.

Experiment 20.—Dog; weight, 15 pounds.

10.20 Rec. temp. 103.5°. Injected 1½ grs. pepsin in jugular.

Time.	Rec. temp.	Box temp.
A.M.		
10.45	104.6°	67.40°
11.45	104.5°	68.40°
	.1°	1.00°
11.48	5 grs. of antifebrin into jugular.	
11.50	104.6°	68.50°
12.50	105.0°	69.40°
	.4°	.90°

Hourly dissipation of heat.....	122.0000
Hourly production of heat.....	120.8750
Hourly dissipation of heat.....	109.8000
Hourly production of heat.....	114.3000

SUMMARY.

Hourly dissipation of heat before drug.....	122.0000
Hourly dissipation of heat after drug.....	109.8000

Hourly loss of dissipation after drug... 12.2000

Hourly production of heat before drug.....	120.8750
Hourly production of heat after drug.....	114.3000

Hourly loss of heat production after drug. 6.5750

Result.—Loss of both functions, dissipation being decreased the most.

Experiment 21.—Dog; weight, 24 pounds.

10.30 Rec. temp. 103°. Injected 3 grs. filtered pepsin.

Time. A.M.	Rec. temp.	Box temp.
11.10	103.7°	61.25°
12.10	105.2°	62.55°
	1.5°	1.30°
12.25	Injected 6 grs. of antifebrin into jugular.	
12.30	105.0°	62.35°
1.30	105.3°	63.60°
	.3°	1.25°

Hourly dissipation of heat.....	158.600
Hourly production of heat.....	185.600
Hourly dissipation of heat after drug.....	152.500
Hourly production of heat after drug.....	157.920

SUMMARY.

Hourly dissipation of heat before drug.....	158.600
Hourly dissipation of heat after drug.....	152.500

Hourly loss of dissipation after drug.... 6.100

Hourly production of heat before drug.....	185.600
Hourly production of heat after drug.....	157.920

Hourly loss of production after drug.... 27.680

Result.—Loss of both functions, production being greatly decreased.

CONCLUSIONS.

1. *Antifebrin* effects marked depression of normal bodily temperature.

2. During the depressing action of antifebrin on normal temperature it seems to cause a slight fall in arterial pressure, although this is by no means a constant result, as it may cause a rise.

In the opinion of the writer, however, this drug in lowering temperature acts as an arterial sedative.

3. Notwithstanding the fact that antifebrin influences to such a marked degree normal bodily heat, it seems to possess little power

against the pyrexia produced by the introduction of pepsin into the blood, since under these circumstances the hitherto depressed pressure rises, as does also the bodily heat.

This curious fact must depend on some organic changes produced by the digestive ferment.

4. This drug reduces *normal* temperature apparently by influencing both production and dissipation.

5. Antifebrin in fever chiefly reduces the high temperature by decreasing heat production, and is therefore a valuable antipyretic.

(To be continued.)

A CLINICAL STUDY OF ANTIPYRIN AND ANTIFEBRIN.

By G. WALTER BARR, M.D., BRIDGEPORT, ILL.

I AM just convalescing from an attack of fever lasting five weeks, during which I made a careful study of antipyrin and antifebrin. The disease was neurasthenia complicated with malaria. My notes from observations taken every fifteen minutes for a long period of time would almost fill this journal, and therefore only generalizations are given.

The dose of antipyrin taken was at first 10 grains, which was increased gradually to 23 grains for a person of nervous temperament, who requires average doses of other drugs. Tolerant of antipyrin increases after a week's use of the drug, and the dose must be constantly increased if it be used long.

Ten minutes after the ingestion of a dose of antipyrin in gelatin capsules an aromatic warmth is felt in the stomach to a slight degree, and ten minutes later a glow seems to spread over the whole body, and is followed by sweating, and in a neurasthenic, irritable person, considerable tranquillity of mind ensued five minutes later. This psychological effect lasted half an hour.

In thirty-five minutes the temperature fell 1° F. The sweating gradually lessened, and ceased in two and a half hours after the drug was taken. In two hours from its ingestion the temperature had fallen about 3° F. This was regardless of the temperature when the antipyrin was taken, which varied from 101° to 105° F. However, it never lowered the temperature below the norm.

The above phenomena were constant. Almost constantly, about fifteen minutes after the dose was taken, the breath had an odor of

ol. carui, sometimes very strong and often more faint. This lasted for about an hour.

The fever invariably began to rise in two and a half hours after the dose of antipyrin was taken, and the antipyretic effect was certainly only transitory. The after-effect was a general, indescribable feeling of greater *malaise*. The only effect on the pulse was its slowing, but the pulse was affected in great disproportion to the temperature and became, on a basis of temperature, abnormally high, though absolutely lower. There was little or no change in the amount and gross appearance of the urine.

Antifebrin was used after antipyrin was begun, and at the same time alternately with the latter. The dose ranged from 5 grains to 13 grains. A tolerance was established to it. A number of times the same caraway odor on the breath was perceived, causing very interesting speculations as to the resultant of the corporeal chemistry upon both antipyrin and antifebrin. The aromatic, stomachic sensation was very seldom felt, the bodily glow and perspiration being generally the first effects noticed from antifebrin when the caraway breath was absent.

Antifebrin causes a fall of temperature in an hour or an hour and a half after its ingestion in gelatin capsules. The fall from one dose is about 4° F., though the norm was never passed in its downward tendency. The decline was maintained for an average of six hours, after which the temperature began to rise again. It has no permanent effect on the fever if its constant use for several weeks is a criterion. It gently stimulated the mind and affected the muscular system almost precisely like coca. I was several times as strong while under the influence of antifebrin as at other times, and intellectual indolence gave way to more energy. The tonicity of the pulse was increased and the rate slowed. Its effect on the pulse resembles that of convallaria majalis. Antifebrin is decidedly diuretic and less diaphoretic than antipyrin. There were no after-effects, not even the depression to be expected after the stimulation it produced. Once the dose of antifebrin had not the slightest physiological effect. The conditions were exactly the same as at other times as near as I could discover, after very careful examination. An ordinary dose of antipyrin immediately acted as usual, and antifebrin afterwards did well. Perhaps some internal conditions hardened the capsule. Every dose of both drugs was taken

in an empty stomach. My curiosity led me to wish for another failure that I might try another dose of antifebrin, but the opportunity never came. To sum up,—

ANTIPYRIN.	ANTIFEBRIN.
Lowers temperature in half an hour.	In an hour or more.
Effect lasts two hours.	Effect lasts six hours.
More diaphoretic.	More diuretic.
Depressing after-effects.	No after-effects.
Cerebral sedative.	Cerebral vaso-motor and muscular (?) stimulant.
Dose, 15 to 30 grains.	Dose, 5 to 15 grains.
Tolerance from continued use.	Ditto.

The above table will suggest the selective use of the two drugs. From the patient's point of view (which is really coincident with the physician's) antifebrin is much to be preferred in continued fevers, because the dose is one small capsule instead of three; the effect lasting so long requires one-third the number of doses; the tonic stimulation excels the depression and after *malaise*, and the cost is one-fourth that of antipyrin. The antipyretic action of antifebrin is as strong or stronger than that of antipyrin, and its only objection is its slowness of action. In insolation and other cases where a quickly-acting antipyretic is necessary, and when it has a specific action on the pathology of a disease, as is claimed in rheumatism, antipyrin is to be preferred. Whenever one can wait an hour for the antipyretic action to begin, I greatly prefer antifebrin, and I know the patient will also. I believe its stimulant or tonic effect to be very valuable in weak patients.

THE THERAPEUTIC EQUIVALENTS OF SALTS OF QUININE.

According to BOYMOND, in *Archives de Pharmacie*, the equivalents for 1 gramme anhydrous quinine are, of the hydrate, 1.16 gramme; acetate, 1.18 gramme; basic muriate, 1.22 gramme; lactate, 1.27 gramme; basic hydrobromate, 1.30 gramme; valerianate, 1.31 gramme; basic sulphate, 1.34 gramme; neutral sulphovinate, 1.39 gramme; arseniate, 1.44 gramme; basic salicylate, 1.45 gramme; citrate, 1.49 gramme; neutral hydrobromate, 1.64 gramme; neutral sulphate (bisulphate), 1.69 gramme; hydroferrocyanate, 1.77 gramme; acid hydriodide, 1.78 gramme; tannate, 4.42 grammes; citrate of iron and quinine, variable; brown quinine, variable.—*National Druggist*, May 13, 1887.

The Therapeutic Gazette

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PHILADELPHIA.

DETROIT, MICH., June 15, 1887.

GEO. S. DAVIS, Medical Publisher, Box 470.

SUBSCRIPTION RATES FOR 1887.

(Journal increased to 72 pages.)

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Leading Articles.

EUCALYPTUS HONEY.

IN *Le Progrès Médical* for April 16, Dr. Thomas Caraman describes the discovery and the medical and chemical properties of a peculiar bee production, to which is given the name of black honey. In May of 1884, M. E. Guilmeth, the French naturalist and traveller, found in a wilderness in the central part of Australasia a number of enormous eucalyptus-trees, and at a great height from the ground perceived a number of dome-shaped, brownish masses, which he at first supposed to be excrescences. Late in the afternoon his attention was called to the going in and out of swarms of black insects from an opening in the dome-shaped masses, and finally, after many hours of labor, one of the trees, whose diameter was said to be between nineteen and twenty metres, was cut down. Out of a single honey receptacle M. Guilmeth took as much as eleven thousand pounds avoirdupois. The insect which secretes this honey is said to be new to science, and has been given the name of *apis nigra mellifica*. It is very small and black, and the languet of the workers is much more developed than that of the or-

dinary bee. All attempts to domesticate it in Tasmania have failed, but it is said that some success has been achieved in Algeria in the neighborhood of plantations of eucalyptus.

A remarkable fact stated by Dr. Caraman is that the ordinary bee condemned to feed upon the flowers of the eucalyptus-tree rapidly dies off.

The so-called black honey is at ordinary temperatures a somewhat transparent, syrupy, thick, homogeneous, dark orange-colored liquid, with a peculiar odor similar to that of eucalyptus, is very soluble in water, milk, and wines, and much less in alcohol. Its fermentation is exceedingly difficult, on account of the large quantity of levulose which it contains. Its specific gravity is 1.44, and it radiates the polarized ray at 22 degrees.

1000 parts of it contain in round numbers 611.6 parts of sugar, mostly levulose, 1.8 parts of ash, 215.6 parts of water, and 171 parts of various substances, comprising eucalyptol, eucalyptene, terpene, cymol, and odorous and resinous matters.

When black honey is given freely to dogs, dissolved in warm milk, it produces a very surprising reduction in the number of cardiac pulsations. Thus, in a feverish dog, the pulse fell from one hundred and twenty-five to seventy a minute; this fall was accompanied by a lowering of the temperature one degree centigrade; the effect lasted twenty-four hours, with a slight tendency to sleep, but with no symptoms of toxic depression.

When a tablespoonful of the honey was given to a man, dissolved in a little warm water or milk, after some minutes a slight agreeable sensation of warmth filled the whole body. In about half an hour eliminations of the active principles through the pulmonic mucous membrane commenced. The voice becomes more clear and sharper, and the breath perfumed. It seems as though the lungs themselves were more elastic.

When Dr. Caraman, who affirms that he is somewhat fleshy, took four tablespoonfuls a day for a week there was marked lessening of shortness of breath on ascending steps, and slight increased diuresis, with an augmentation of the urea. The urine acquired an odor resembling that of the *Cassie farnesiaum*, an Algerian plant, from which is prepared the perfume habitually sold under the name of new-mown hay.

Dr. Caraman believes that this honey will be a valuable remedy in the treatment of bronchial catarrhs, and that it acts as a sedative to the heart-beat, in a manner similar to

digitalis. He thinks also that it will be of practical value as a febrifuge and as a bactericide. He hopes much from it in the destruction of the bacilli of phthisis and the pneumococcus of pulmonic inflammations, and even asserts it has been employed in typhoid fever with success, and that in leucorrhœa, whether from accident or constitutionally, it causes the affection rapidly to disappear, and kills the leptosis vaginalis and the oxyures. He has also found it of great use in the treatment of gonorrhœa and diseases of the kidneys, bladder, and urethra, and affirms that it acts more energetically than the pobatha or sandal oil.

It is not at all probable that this substance will fulfil all the expectations of its enthusiastic advocate, but if it only do a portion of what is claimed for it, it will be a valuable addition to our therapeutic resources. If it be produced in as enormous quantities as are described by M. Guilmet, it ought eventually to find its way into general commerce and be obtainable at a merchantable price. We do not know, however, of any of it as yet reaching this country. If it grow in importance it is probable that artificial eucalyptus and honey will be offered for sale, and it is, therefore, a matter of importance that not only the physical and medicinal properties of this drug be very carefully described, but that some test of purity be worked out.

TREATMENT OF CHRONIC SYPHILIS.

IN the treatment of chronic syphilis but too often it happens that the patient improves up to a certain point and then ceases to respond to the administration of anti-syphilitic remedies, even when they be combined with the most careful hygienic treatment and the exhibition of tonics, etc.

Any remedy which offers a fair probability of being able to carry on the amelioration of the disease under these circumstances is one worthy of very careful consideration by the profession.

Many years ago Mr. Carmichael, of Dublin, asserted that he found the oil of turpentine often of unquestionable value in the treatment of obstinate and long-continued syphilitic iritis, and during the service of Mr. G. J. Guthrie, of the Royal Ophthalmic Westminster Hospital, the practice was accompanied with alleged excellent results.

Mr. Jabez Hogg of the same hospital has recently (*Medical Press and Circular*, April

27) published the account of a case in which, after the failure of mercurials by the mouth, by inunction, and fumigation, conjoined or alternated with the use of mydriatics, tonics, iodide of ammonium, iron, etc., turpentine succeeded. It was given in $\frac{1}{2}$ -drachm doses, suspended in mucilage, three times a day after meals. For the first week an inunction of a twenty per cent. solution of the oleate of mercury was freely employed, but this was then laid aside, and for four months the turpentine alone was steadily persevered in. Not only was the patient's general health improved, but the corneal opacity of the iritis gradually disappeared, and at the time of the making of the report the serous exudations and other local changes in the eye had so far been absorbed or ameliorated that the vision was almost what it was before the first inflammatory attack, fourteen months previous.

THE DIURETIC ACTION OF MERCURIAL PREPARATIONS.

THE diuretic action of calomel, known to the older physicians, has been, as the readers of the *GAZETTE* are familiar, again brought to the attention of practitioners, and we have published testimony from a number of different observers which indicates that under certain circumstances calomel is one of the most active diuretics that we possess.

That this diuretic action is not peculiar to calomel, as has been claimed by a number of writers, but is also, though perhaps to a less degree, possessed by other mercurial preparations, has been brought into prominence by Dr. Rosenheim in a paper read before a recent meeting of the Verein für Innere Medicin of Berlin (*Therapeutische Monatshefte*, April, 1887).

The author employed corrosive sublimate, yellow iodide of mercury, and the amidato bichloride in amounts of from $1\frac{1}{2}$ to 2 grains given daily. These preparations of mercury also proved themselves active diuretics in these large doses, but they produced more irritation in the intestinal canal than calomel, and also fell behind calomel in the degree of diuresis. On the other hand, the stomatitis produced by these mercurial preparations was but slight. Diuresis only follows when large doses of some mercurial preparation are rapidly absorbed, seemingly indicating that the production of diuresis is due to the acute mercurialization of the organism. The correctness of this view is ren-

dered more probable by the large amounts of mercury which are excreted through the urine.

Dr. Rosenheim's experiments with calomel still further strengthen its position as a diuretic. He employed it in sixteen cases of heart-disease complicated by dropsies, in several of which kidney complications were also present. In nine of these cases a prompt diuresis and disappearance of the œdema followed the use of calomel. In four its action was but moderately successful, and in three it entirely failed. It is worthy of notice that in all these cases before calomel was administered digitalis had been tried and proved inefficacious. Since it has been found that calomel has no direct action either on the heart or kidneys, kidney-disease offers no contra-indication to the use of calomel for the purpose of producing diuresis. In fact, Dr. Rosenheim has employed calomel for this purpose in purely nephritic dropsy. It is true that the results, however, were unfavorable. In the greater number of patients to whom calomel was administered a more or less severe stomatitis was produced, and in nearly all cases diarrhœa.

In the discussion which followed the reading of Dr. Rosenheim's paper, Dr. Leyden reported that he had treated three cases of cirrhosis of the liver with calomel. In one failure had resulted, in one marked but temporary relief, and in one a permanent amelioration.

In the treatment of dropsy from heart-disease, he regarded calomel as a valuable contribution to our therapeutic measures.

Fürbinger, on the other hand, claimed that the diuresis produced by calomel, although perhaps occurring in a high degree, was invariably ephemeral, and he regarded its mode of production as dependent upon a direct action on the glandular epithelium of the kidney, since calomel never acted as a diuretic in œdema dependent upon previous parenchymatous nephritis.

Dr. E. Biró, of Budapesth, has also confirmed the general experience of others as to the marked diuresis which follows the use of calomel, and although in his practice stomatitis, colic, and diarrhœa were frequently produced, he regards these complications of but little moment in view of the powerful action of the remedy. He has found that the degree of diuresis depends upon the intensity of the œdema, and he relates one case of mitral insufficiency in which the amount of urine was increased on the fifth day from eight hundred to six thousand eight hundred cubic centi-

metres. For the stomatitis, which is at the worst merely transient, he recommends a mouth-wash of potassium chlorate, and small doses of opium powder for the diarrhœa and colic.

Terray (*Pest. med. chir. Press.*, 1886) and Weinstein (*Wien. med. Blätt.*, 1887, No. 7, p. 206), whilst affirming the diuretic effects of calomel, as reported in the *Medical Chronicle*, May, 1887, draw attention to the evils which may follow its administration. Terray states stomatitis occurred in all his cases, and its intensity seemed directly proportional to the diuresis.

Weinstein records a marked increase in the excretion of urine in four cases of pleural effusion, two cases of cirrhosis of the liver, and one case of Bright's disease. But he found great evils arise from the administration of calomel as a diuretic, profuse diarrhœa, stomatitis, and salivation sometimes occurring after even small doses. The diuretic influence of the drug, he says, is not of long duration, and he recommends it chiefly in ailments which have run their acute course, leaving œdema behind them, and in those where the mercurial itself is likely to exercise a beneficial effect, e.g., in pleural exudations.

PREVENTION OF DIPHTHERIA.

A RECENT document issued by the State Board of Health of Michigan is, in its few brief paragraphs, the most eloquent plea we have ever seen for the establishment and maintenance of Boards of Health, and shows that when this department of the Public Service is properly organized with suitable *personnel*, and clothed with sufficient power, it is capable of saving numerous lives.

During the year 1886 there occurred in the State of Michigan 461 outbreaks of diphtheria. Of 243 of these outbreaks there is no clear record as to an attempt to restrain the spread of the disease by isolation or disinfection. Of the remaining 228 outbreaks the statements are clear. In 102 outbreaks no attempt was made either to isolate the earlier patients or to disinfect the apartments or surroundings; the result was that there were 1650 cases of the disease, with 329 deaths, or an average of 16.18 cases and 3.23 deaths to each outbreak. In 116 outbreaks isolation and disinfection were both more or less rigidly enforced; the result was that there were only 332 cases and 77 deaths, or an

average of 2.86 cases and .066 deaths to each outbreak. According to these figures nearly 1500 cases of diphtheria and 300 deaths were prevented by the local Boards of Health.

THE INDEX MEDICUS.

WHEN Mr. George S. Davis, after the failure of the firm of George P. Leypoldt to put the *Index Medicus* upon a sustaining basis, undertook the publication of this work, we spoke earnest words of commendation, and urgently solicited support for the enterprise from our readers. It is, therefore, with great pleasure that we note the passage of the following resolutions at the recent meeting of the Tennessee State Medical Society in Nashville :

"WHEREAS, The medical profession of this country has for years taken a great interest in the permanent establishment of the *Index Medicus*, first published by Leypoldt, of New York City, in 18—; and

"WHEREAS, By the death of this public-spirited friend of science and literature the current cyclopædia book of reference was *in articulo mortis*; and

"WHEREAS, Mr. Geo. S. Davis, secretary of the firm of Parke, Davis & Co., Detroit, Mich., at the earnest solicitation of medical editors and writers in all parts of the world, undertook to keep it alive; therefore, be it

"Resolved, That the Medical Society of the State of Tennessee do hereby express its high appreciation of this liberal aid given investigators everywhere, and earnestly hope the profession will not allow the final effort to maintain a great periodical which has reflected special credit on American medical science to fail because of indifferent and niggard support."

Reports on Therapeutic Progress.

THE TREATMENT OF LUPUS.

At a recent meeting of the Nottingham Medico-Chirurgical Society, Mr. CHICKEN (*Lancet*, April 23, 1887) read a paper on the "Treatment of Lupus and its Allied Disorders." He took epithelioma as a type of the diseases allied to lupus as exhibiting a cutaneous or mucous cell development, infiltrating or penetrating subjacent tissues, and depending on a specific morbid impulse. In the case of an affection of the skin, or those

parts which could be safely operated upon, he advocated the treatment of the part by thoroughly scraping away, as far as possible, the new growths, and then the free rubbing in of iodoform. In those instances where the situation was such that this could not be done,—as, for example, in epithelioma of the cervix uteri,—he employed the frequent application of iodoform. Although, in these difficult cases, it was not possible to eradicate the disease, it modified the subsequent progress and unpleasantness of the malady in a marked degree. In epithelial stricture of the rectum, he first washed out the bowel with warm water, and then injected into the stricture from two to four drachms of iodoform daily by means of a special insufflator. In exposed situations, where the treatment could be thoroughly carried out, the result was very satisfactory. He showed two cases, one of lupus and one of epithelioma, both of which had been operated upon in the manner described, some years ago. There had been no recurrence. Mr. Chicken drew the following conclusions: 1. That lupus and epitheliomata are types of a cellular infiltrating new growth, and are best treated by scraping with a blunt knife, and when the surface has been as far as possible cleared from the invading cells, by rubbing in a remedy, of which iodoform is a good example, with the object of penetrating to those outlying detachments which the knife has not reached. 2. That when the growth is situated in a part that can be readily attacked the treatment gives ground for a good hope of recovery, at any rate better than excision. 3. That when the situation is such that scraping cannot easily be done, the copious insufflation of large quantities of iodoform is practically without risk and of great benefit to the condition of the patient. 4. Iodoform is specially applicable, because it seems to exert a specially sterilizing influence on the growth, and is capable (by virtue of its volatile and peculiar penetrating properties) of permeating tissue more than an insoluble non-volatile substance. It is quite harmless and unirritating to healthy structures.

ELECTRICITY DURING AND AFTER LABOR.

There are probably very few complaints and infirmities for which electricity in one form or another has not been tried, with varying success, it is true, but this uncertainty in its effects is attributable not only to the greater or less appropriateness of its employment,

but also to the greater or less manipulative dexterity of the person using it. A case is reported in a French medical journal in which its application both for the purpose of stimulating labor, and subsequently for cutting short an attack of violent post-partum hemorrhage, was attended with great success. When the flooding began, the removal of the clots with internal manipulation of the uterus, together with injections of vinegar and hot water, were tried, but failed to excite uterine contraction. The medical attendant then took advantage of the proximity of a strong battery to cut short the attack. He placed one pole in the hand of the patient, and took hold of the other himself. With his disengaged hand he grasped the uterus through the abdominal walls. The experiment was a disagreeable one for the doctor, but he had the satisfaction of seeing the uterus contract promptly and firmly, and the hemorrhage ceased. It is, of course, impossible to affirm that the result in this case was due directly, and only, to the stimulus of the current, but there is every reason to believe that the effect of a strong and interrupted current on the muscular fibres of the uterus would be likely to favor such a result. The experiment is certainly one worth repeating, and we would commend it to the attention more particularly of lying-in institutions, where it would not be difficult to arrange for a suitable apparatus being kept ready for immediate use. In private practice, too, in cases where flooding for some reason or another is feared, it would be well for the practitioner to provide himself with the necessary paraphernalia, since no agent which offers any resource against such a terrible enemy as post-partum hemorrhage is to be neglected in these cases.—*Medical Press*, April 13, 1887.

ANTIPIRYN AS AN ANODYNE.

According to the Paris correspondent of the *London Lancet*, April 30, 1887, at a recent meeting of the Academy of Sciences, PROFESSOR GERMAIN SÉE made a communication upon "The Treatment of Pain by Antipyrin." This substance, which was discovered by Knorr in 1884, was first employed, as its name implies, for lowering the temperature, and it was expected that it would prove useful in typhoid fever, articular rheumatism, and other acute affections. It has not, however, been

as satisfactory in its action as was anticipated, and if the temperature can be by its use lowered at will, it does not seem to exercise much effect upon the process of disease. But according to M. Germain Sée, antipyrin is the remedy, *par excellence*, for pain, and far superior in every way to antifebrin. In fifteen cases of subacute rheumatism, or hydrarthrosis, treated unsuccessfully by salicylate of soda and ignipuncture, the pain and swelling disappeared in a few days, and, the medicine being continued, there was no relapse. The same effect was observed in cases of acute gout, both primary and secondary to chronic gout with chalky deposits. Antipyrin, to the extent of from 60 grains to 90 grains a day, removed both pain and swelling in from two to four days without any bad effect either on the heart or kidneys. But it is, above all, in nervous pain that its action is most remarkable. A first group comprises four cases of facial neuralgia, one of which was inveterate, six of migraine, with one failure, and four headaches. In a second series are classed five cases of sciatica, one of simple neuritis, two of diabetic neuritis, and two of neuritis with zona (one failure). Cases of lumbago and muscular rheumatism make up a total of eighteen. The third category relates to five cases of locomotor ataxia, in four of which the pains were removed by antipyrin. In the fifth instance it failed, as did also antifebrin. The last group comprehends those affections of the heart, aorta, and coronary arteries in which angina is a most painful symptom. In six patients with cardio-aortic disease, and in three others with aneurism, the painful manifestations disappeared entirely, without any evil effect being caused by the medicine on the strength or regularity of the cardiac pulsations. The dose given by M. Sée is from 3 to 6 grammes daily. If too much is given at one time, nausea and giddiness may supervene, but when the whole amount is divided into small repeated doses of half a gramme, no disagreeable effects are observed. Antipyrin may be given and continued for a length of time with but little risk. Antifebrin, on the other hand, is dangerous when administered in doses exceeding 1 gramme. It causes hæmoglobin to pass into the condition known as metahæmoglobin, and the blood, losing part of its oxygen, becomes of a chocolate color, cyanosis and collapse being the consequences. From laboratory experiments it is found that reflex excitability to electricity is diminished by antipyrin, and the sensory perceptivity of the cord is lessened.

NARCEINE.

Some experiments made by M. LABORDE with narceine specially prepared by M. Duquesnel, so as to be free from morphine and codeine, appear to have given results varying considerably from those obtained on previous occasions with what may be presumed to have been less pure preparations. M. Laborde states (*Archives de Pharm.*, April 5, p. 183) that he found this narceine much more active than any he had used before. A dose of 2 centigrammes caused the disappearance of insomnia in an adult, and in case of acute or chronic catarrhal bronchitis it rapidly relieved the cough. The quantity administered can be carried to 4 centigrammes, but it should be given in fractions of a centigramme at a time. It also soothes the paroxysms of whooping-cough in children, and M. Laborde recommends its administration for this purpose in a teaspoonful dose containing $\frac{1}{4}$ of a centigramme of narceine. Its effect when injected subcutaneously into dogs, in quantities of 1 to 3 centigrammes, is described as differing remarkably from that of morphine, the pure narceine producing a quiet, natural sleep, whilst with morphine there is considerable disturbance.—*Pharmaceutical Journal and Transactions*, April 30, 1887.

THE DIFFICULTIES IN ESTABLISHING
NATURAL RESPIRATION AFTER
TRACHEOTOMY, AND THEIR
TREATMENT BY TRACHEAL
CATHETERIZATION.

At a recent meeting of the Clinical Society of London, MR. BILTON POLLARD referred to three cases illustrating the difficulties in establishing natural respiration after tracheotomy, and drew attention to their treatment by tracheal catheterism (*Lancet*, April 30, 1887). The difficulty in getting rid of the tube after tracheotomy was by no means uncommon, and in two of the cases related it persisted after most determined and persevering attempts had been made for more than a year and a half by the usual methods. Two of the cases had been for a long time under the care of Mr. Godlee, and had passed into Mr. Pollard's hands when he succeeded Mr. Godlee at the Northeastern Hospital for Children. The first case was a boy aged two and a half years, on whom tracheotomy had been performed for laryngitis. For eight months frequent attempts were made to dispense with the tube. Mr. Godlee then catheterized the larynx without benefit. Five

and a half months later a piece of india-rubber tubing was passed through the larynx from the mouth to the tracheotomy wound, and left in position for forty-eight hours, without any improvement in laryngeal respiration. The operation was repeated four months later without success. A year and seven months after the tracheotomy Mr. Pollard passed a tracheal catheter from the mouth through the glottis and into the trachea, beyond the tracheotomy opening. It was retained for thirty-one hours, and after its removal the patient continued to breathe through his mouth. The tracheotomy wound was firmly healed in a fortnight, and the child had been perfectly well for the six months that had passed since the operation. In the second case (a boy aged 6) the windpipe had been opened for laryngitis. Three months after the operation, all attempts to get rid of the tube having failed, Mr. Pollard passed the tracheal catheter, and in doing so dislodged a piece of granulative tissue, which was coughed up. Pneumonia followed in this case, but the patient was nevertheless cured, and was discharged a fortnight after the operation. He remained perfectly well for the three months that had passed since the operation. In the third case (a boy aged 4) the operation had been performed for impaction of a foreign body in the right bronchus. For seven months attempts were made to get rid of the tube. Mr. Godlee then removed granulative tissue from the trachea and catheterized the larynx. The latter procedure was frequently repeated during the next three and a half months. Two years and three months after the tracheotomy Mr. Pollard found the vocal cords adherent; he separated them, and, after dilating the glottis with Lister's sounds, passed the tracheal catheter, which was kept in position for thirty-eight hours. It was not until three weeks after this operation that the patient breathed through his mouth alone. The boy's voice returned, but after four weeks laryngeal respiration was so difficult, owing to the vocal cords having grown together again, that the trachea had to be reopened. The only difference between the plan Mr. Pollard followed and that which Mr. Godlee adopted was that, by keeping the tube in the trachea whilst the tracheotomy wound was allowed to close, the patients were left, on its removal, without the opportunity of making use of the passage which, from constant employment, had become for them the natural one. In the first and second cases the chief cause of ob-

struction was laryngeal spasm, but in the second there was also a growth of granulative tissue. In the third case there was a genuine stricture of the larynx, and the tracheal catheter served as a means of continuous dilatation; the result in this case showed that the dilatation should have been employed for a longer period. In two of the cases the tracheotomy incision had divided the cricoid cartilage, and Mr. Pollard suggested that this method of operating might be a cause of the difficulty of re-establishing laryngeal respiration in those cases.

MR. HOWARD MARSH thought that in performing tracheotomy it should not be forgotten that the trachea was a canal, like the urethra, lined by delicate mucous membrane. Ulceration and granulation-tissues were frequently developed under the influence of the mechanical irritation of the tracheotomy tube. The fenestra in the tube was often the offending point, and when situated posteriorly then a hernial-like protrusion of the posterior wall might become the seat of granulations. He advocated the use of tracheotomy tubes with movable necks, and with a round, not bivalve, body. The surgeon should have an assortment of tubes to fit different cases, for in some the neck was very shallow, in others very deep, and so forth. He doubted whether all the cases could be successfully treated as Mr. Pollard's, and related a case in which no lumen through the larynx, which was full of granulation-tissue, could be detected on examination. Such a case was likely to prove hopeless under any method of treatment. The lapse of time was an important item in the cure of such cases, for cicatrization might occur meanwhile, and the natural growth and enlargement of the respiratory passages would come into operation. He mentioned a case of stricture of the trachea from permanent contraction which occurred in a child, now a woman, aged 25, but without any recovery of breathing power.

MR. C. H. GOLDING-BIRD considered that Mr. Marsh exaggerated a little the harm done by the fenestra in the tracheal tube. The permanent rough edge of the two-bladed tube was very deleterious. At the present time he had two cases under his care in which the children ceased to breathe on removal of the tube. In these the conditions were probably the same as those he had described in 1885. The edges of the tracheotomy wound were grown upon by granulation-tissue. In one case a growth of granulations existed on the posterior surface of the trachea, and this was

removed by Toynbee's ear forceps. He did not think the tube would account either for the absence or presence of granulations. A phlegmonous inflammation occurred in some cases, but he could not say whether this had any share in the causation of the granulations. In many the muscles of the larynx wanted treatment, and he thought that catheterization, which he had practised for some years past, might act by rousing the muscles into proper action.

MR. R. W. PARKER recognized two classes of cases: those with and those without mechanical obstruction. The former far outnumbered the latter. Treatment by catheterization for the cases of mechanical difficulty would not always prove successful. Thickening of the mucous membrane of the pharynx and aryepiglottic folds was an important condition not sufficiently recognized. In the second case he believed that the catheterization proved dangerous by detaching granulations.

In some patients the difficulty remained because the surgeon delayed too long the attempt to remove the tracheotomy tube. He agreed with Mr. Marsh that the tube should be fitted to the case, for the variety in size of the neck, trachea, and child was great. He believed that treatment was not yet entirely successful. Reference was made to a case under his care in a child aged 2 years, who had scalded his glottis, but for whom little could be done at present, though doubtless time would prove of great service, as it had done, in his opinion, in Mr. Pollard's case, for the larynx remained small till about the age of twelve or thirteen, when an extra development occurred, especially in the male sex.

MR. BILTON POLLARD, in reply, could not agree that the pneumonia was due to the trickling down of blood, but believed that it was due to collapse of the left lung, owing to the direction of the tube, which perhaps permitted air only to enter the right lung, for there were no breath-sounds on the left side of the chest whilst the tube was in. The further progress of the third case was not altogether unsuccessful; many granulations about the vocal cords had by treatment developed into cicatricial tissue, there being a sufficient opening through the larynx to permit of breathing for as long as twenty-four hours, when the tracheal tube had to be replaced, apparently because mucus in the trachea became excessive, and the child had difficulty in coughing this up.

IODOL.

SEIFERT reports his experience with iodol in the treatment of laryngeal tuberculosis, and was much pleased with his results. At first he used a mixture of iodol and starch, but when he found that iodol alone produced little or no irritation, the drug was used alone. The patients bore the insufflation of the powder extremely well. The loss of appetite, so commonly seen after the use of iodoform, did not occur, the ulcers rapidly became clean, and the tendency to form scars was scarcely observed. In the case of a man, aged 35, a tuberculous ulceration of the right vocal cord was healed by creasote, glycerin, iodoform and boric acid; an ulcer of the left cord was healed by insufflation of iodoform, and the infiltration was removed by painting with lactic acid; and finally, six months later, a newly-formed tuberculous infiltration and ulceration of the left false cord was healed by insufflation of iodol.

In other diseases iodol was most acceptable because of its freedom from odor, non-irritability, lessening of secretion, and power of disinfection. He had also tried iodol in atrophic rhinitis, after the use of the galvanocautery in the nose and vaso-pharynx, in the treatment of syphilitic ulcers, round ulcers, suppurating buboes, and after opening the pustules of acne.

Internally, iodol was given in a case of sub-sternal struma, 3 grains in pill form, with good results.

To observe the elimination of iodol the writer himself took 8 grains without bad effect.

Iodine appeared in the urine twelve hours after taking, and also in the saliva; the elimination was greatest eighteen hours after taking, and persisted three days.—*Centralb. für Chirurgie*, April 9, 1887.

TREATMENT OF DIABETES.

According to the Paris correspondent of the London *Lancet* (April 30, 1887), DR. LE BLOND makes known another "specific" treatment for diabetes, which, if not precisely new, is novel in its mode of application, and from which he has obtained some remarkable results. The administration of oxygen in the form of peroxide of hydrogen has often been tried, but, although it would seem theoretically to be the ideal treatment for glycosuria, results have not been sufficiently constant to popularize it. M. Le Blond has reopened the

question, and advises the administration of an aerated water which has been manufactured in Paris for the last few years, and which only differs from the familiar *siphon* in that it is gaseous from oxygen instead of carbonic acid. Three cases are reported, in which the treatment caused the total disappearance of sugar from the urine; in a fourth the partial failure was due to imperfect oxidation from chronic bronchial catarrh.

BENZOYL TROPINE AS AN ANÆSTHETIC.

In a search made with the hope of finding some compound that might, like cocaine, possess anæsthetic properties hitherto unobserved, PROFESSOR FILEHNE was induced to turn his attention to the tropeines, atropine having been formerly regarded as a gently acting local narcotic (*Berl. Klin. Woch.*, No. 7; *Med. Rec.*, April, p. 136). By experiment atropine was found to have a slight but distinct paralyzing influence on the ends of the sensory nerves, whilst with homatropine this effect was very decided. Tracing some analogy between the splitting up of atropine into tropine and tropic acid, and that of cocaine into ecgonine, benzoic acid, and methylic alcohol, and ecgonine proving to be inert, Professor Filehne inferred that the anæsthetic property was conferred by the acid radicle. Moreover, he found confirmation of this inference in the fact that just as homatropine stands between atropine and cocaine in its anæsthetic property, amygdalic acid, the acid of homatropine, is in constitution intermediate between tropic and benzoic acids, the acids of atropine and cocaine respectively, as is shown by the following formula:

Benzoic acid, C_6H_5COOH ;

Amygdalic acid, $C_6H_5CH < \begin{smallmatrix} COOH \\ OH \end{smallmatrix}$;

Tropic acid, $C_8H_5CH < \begin{smallmatrix} COOH \\ CH_2OH \end{smallmatrix}$.

Professor Filehne was, therefore, led to anticipate that the compound resulting from the union of benzoic acid with tropine would have a greater local anæsthetic effect than homatropine. This was fully confirmed by experiment, benzoyltropine proving to be a wonderful local anæsthetic, whilst when applied to the eyes it also exercised the action upon the pupils and accommodation characteristic of other tropeines. A number of "benzyl derivatives" were therefore tested, and all proved to produce a decided local

anæsthetic effect, benzylmethyltriacetonal-kamine being the most powerful of those tried, benzyl-quinine came next, and the weakest was benzyl-morphine. This would seem to be a curious instance of a correct deduction being drawn from a false premise, for apparently, of all the compounds experimented with, cocaine was the one which told most strongly against the theory that the anæsthetic rôle is played by the benzoic radicle. If this assumption were correct, benzoyl-ecgonine should have anæsthetic properties, which is contrary to common experience with this decomposition product of cocaine. Dr. Stockman reports on benzoyl-ecgonine (*Pharm. Journ.*, (3) xvi. 898), "the chief action of cocaine, namely, the paralysis of the sensory nerves, is quite absent; in fact, the relationship between the two substances seems to be as profoundly altered by the subtraction of a methyl group as is the case with methylstrychnine and strychnine."—*Pharmaceutical Journal and Transactions*, April 30, 1887.

TREATMENT OF GRAVE EPISTAXIS.

According to the Paris correspondent of the London *Lancet* (April 30, 1887), M. VERNEUIL, who, although one of the most eminent surgeons, makes frequent incursions into the domain of pure medicine, read a communication at the Academy of Medicine upon the treatment of certain forms of epistaxis by counter-irritation over the region of the liver. M. Verneuil began by stating that he had at first thought that the method was entirely his own, but from bibliographical research it turned out that he had been anticipated to a certain extent by Galen, who says that large cupping-glasses applied to the hypochondria arrest nasal hemorrhage. In the first case related by M. Verneuil, the epistaxis was probably symptomatic of cirrhosis of the liver. Quinine, ergotine, and digitalis had all been tried in vain. The hemorrhage continued to recur at intervals. The second patient had suffered from nasal hemorrhage, which seemed to have been caused by the shock of a kick from a horse. In this case plugging had failed. The third was the subject of chronic nephritis, with secondary affections of the heart and liver, and the cavity of the nose had been plugged without effect both with ergotine and perchloride of iron. M. Verneuil's treatment, which was immediately and permanently efficacious, consisted of the application over the region of the liver of a large blister.

ANTIPYRIN IN MIGRAINE.

Antipyrin is best known for its rapid action in the treatment of pyrexia, and it is commencing to acquire a reputation in the treatment of neuralgia. DR. T. S. ROBINSON states in the *Medical Record* for May 7, 1887, that he has a record of over eighty cases in which during the past two years antipyrin was used for the relief of migraine.

These cases are not selected. In fifty-four the drug acted favorably in from thirty minutes to two hours. In fifteen cases the pain was much abated, and when he resorted to chloral, bromides, or other drugs, he had to use smaller doses than the patient had otherwise been in the habit of taking. The relief was greater and the attacks generally cut short. In eight cases it had little or no effect. The reports from successful cases were all in favor of this drug, not only that it was quicker in its action, but that it did not leave the ill effects generally left by other forms of medication they had been in the habit of using. The usual narcotic treatment of migraine is generally hurtful, the patient being too ready, on the slightest symptom of pain, to fly to his favorite drug, many times establishing a habit which is worse than the original disease. This objection cannot be applied to antipyrin, as it neither narcotizes nor stimulates our patients.

He recommends that patients who are subject to attacks of hemicrania should keep powders of antipyrin of 22 grains each constantly on hand, and that on the first symptom of the attack one powder should be taken in a little Vichy water, and repeated in two hours if the pain is not abated.

THE ADMINISTRATION OF CARBONATE OF LIME AS A MEANS OF ARRESTING THE GROWTH OF CANCEROUS TUMORS.

Nearly twenty years ago DR. PETER HOOD published a communication on the value of carbonate of lime in the form of calcined oyster-shells as a means of arresting the growth of cancerous tumors. In the *Lancet* for May 7, 1887, he publishes a second communication on the same subject, in which he states that although his opportunities for employing it in suitable cases have not been large, the results which he has attained through its use have been extremely satisfactory. He refers to several cases in which a persevering use of the calcined shell powder

arrested the growth and pain in tumors undoubtedly of a cancerous character. Dr. Hood urges the persistent and fair trial of this remedy in cases of cancer, where the nature of the affection is early recognized. It can do no possible harm, it need not interfere with other remedies for the relief of pain, its action can be referred to an intelligible and probable hypothesis, and it has been of utility in a sufficient number of cases for warranting us in reposing some confidence in its use.

An advantage of the treatment is that it may be readily prepared at home by baking oyster-shells in an oven, and then scraping off the calcined white lining of the concave shell. The substance thus obtained is to be reduced to a powder, and as much as will lie on a silver quarter taken once or twice a day in a little warm water or tea.

A SIMPLE METHOD OF OPERATION FOR DIVERGENT SQUINT.

Readjustment of the insertion of the internal rectus is now a recognized surgical procedure. It is therefore important that the operation should not only be effectual, but easy of performance and as simple as possible. Since its introduction it has undergone various modifications and is still a very tedious procedure, necessitating the use of an anæsthetic, during the administration of which the patient not infrequently vomits, and matters are thus greatly complicated. The introduction of cocaine has to some extent lessened these inconveniences, but has scarcely enabled us to dispense with the use of an anæsthetic in operations involving the deeper structures.

MR. RICHARD WILLIAMS (*British Medical Journal*, April 23, 1887) recommends the following method as one which will in most cases not require the use of an anæsthetic, and in which the time of the operation may be greatly shortened :

An incision is made in the conjunctiva and subconjunctival tissue over the tendon of the internal rectus, extending from near the margin of the cornea for about half an inch towards the inner canthus. The edges of this incision being separated, the strabismus hook is inserted under the tendon in the usual way, and then confided to an assistant. A curved needle armed with a suitable silk thread is then inserted in the conjunctiva near the margin of the cornea, and carried between the sclerotic and the conjunctiva

towards the muscle behind the hook. It is then passed through the tendon from edge to edge at right angles to the course of its fibres, and brought out at the opposite side of the conjunctival wound. The edge of the conjunctiva at this side of the incision is now raised with a pair of forceps, the needle is insinuated between it and the sclerotic, and brought out near the margin of the cornea at a point corresponding to the point of entrance. It will be seen that the tendon and conjunctiva are included in a single loop. At this juncture the external rectus may be divided or not, according to the requirements of each individual case. This point having been disposed of, the tendon of the internal rectus is divided at a safe distance from the ligature, and the hook is removed. By now tying the two ends of the loop together, the margin of the cornea is brought into apposition with the cut end of the tendon, and the eye is brought into a position of more or less internal squint. Finally, the edges of the conjunctival incision are brought together by means of a fine suture.

The advantages claimed for this operation are : (1) that it is much shorter and simpler than the usual method ; (2) that by passing the ligature in the manner described a very firm hold is obtained both of the tendon and the conjunctiva, which is sometimes apt to tear ; (3) that no anæsthetic is generally required. The objection which naturally suggests itself is that there is a certain amount of tendency to puckering of the end of the tendon where the loop is tied. It would appear, however, this objection is more theoretical than real ; at any rate, Mr. Williams has not found that it jeopardized the success of the operation in any of his cases. Moreover, it can to a large extent be avoided by placing the points of entrance and exit of the ligature at a considerable distance from each other.

HUAMANRIPA.

A Chilian plant, called by the natives huanripa, has recently been reported on by M. Bignon, of Lima, who says that it possesses a deserved reputation as a specific in all diseases of the respiratory tract. It grows only on the slopes of the Cordilleras at a considerable height, and is a small composite plant belonging to the genus *Cryptochaete*. It has long lanceolate leaves, and flourishes from January to May, after which it disappears, although the rhizome remains. It is said to

be very aromatic and resinous. An infusion is used, made from twenty-five grammes of the leaves to a litre of water, which is bitter and aromatic; if made of greater strength it causes nausea. According to DR. ZAPATER, the infusion increases the circulation, accelerates the cardiac movements, and augments the secretions, especially the flow of saliva. In larger doses it causes vomiting, excessive perspiration, diminishes the number of pulsations as well as the respiratory movements, and lowers the temperature. In pleurisy and inflammation of the lungs it seems to have almost a specific effect, according to Dr. Zapater. When it is desired to prevent nausea, a little brandy is given with the infusion.—*Pharmaceutical Journal and Transactions*, April 30, 1887.

THE TREATMENT OF INTRA-PERITONEAL INJURIES.

Abdominal section for the treatment of intra-peritoneal injuries was made the subject of an address delivered by SIR WILLIAM MACCORMACK before the Medical Society of London at its meeting held May 7, 1887 (*London Lancet*, May 7, 1887). The text of the speaker's address was founded on his experience in the treatment of two cases of intra-peritoneal rupture of the bladder produced by external violence. In both of these cases the abdominal cavity was laid freely open, the rent in the bladder closed by suture, and the peritoneal cavity effectually purified. In each instance the patient completely recovered, and two men, the subjects of a heretofore fatal injury, were restored to perfect health.

Injuries of the abdominal viscera may be grouped under three heads,—first, incised penetrating wounds of the abdomen implicating the intestine or other viscera; second, abdominal gunshot wounds; and, third, traumatic rupture of the intestine and viscera without external wound. Of course the great difficulty that besets the surgeon in the management of such injuries is that of diagnosis. These lesions are almost invariably fatal, and the very difficulty of diagnosis imposes upon the surgeon the necessity for clearing up the doubt as to what the nature of the injury may be. It is, therefore, now almost universally recognized that the duty of the surgeon is to explore, first, the wound of the parietes, if such be profound, to see whether it is perforated or not; and, second, examine the abdominal viscera through an exploratory incision to see whether and where they are

injured. Such a treatment is now not only justifiable, but it even may be claimed that a surgeon who, called to an obscure case of severe abdominal injury, or to a penetrating wound of whatever kind of the abdominal viscera, neglects this preliminary operation, is throwing away one of the chances which might have existed for saving his patient's life. An intestinal wound having been discovered, the proper line of treatment undoubtedly is to close it with the utmost care by the Lembert suture, as the one preferred by Sir William MacCormack, after having cleansed the peritoneum and closed the external wound. Already the statistics of the treatment of such cases have shown a successful result in ten out of eighteen stab wounds, while in thirty cases of penetrating gunshot wounds seven have been saved.

In the application of the intestinal suture three conditions are required to insure its successful application,—first, two adequately broad and sufficiently wide surfaces of the peritoneum must be brought into contact; second, the mucous membrane must be excluded, for when the needle passes through the whole thickness of the gut, peritonitis generally ensues from leakage taking place along the line of the thread; third, rapidity of execution is of extreme importance, and that form of suture is the best which can be effectually applied in the shortest time.

In the case of incised wounds of the intestine, if small and if clean cut, the edges of the incision may themselves be sutured together, and where rupture has occurred, or in the case of gunshot wounds in which the intestine is perforated at more than one point, excision of the injured locality is nearly always required. In the case of rupture of the intestine without external wound, exact diagnosis is almost always impossible, and the chief indications for operative interference are varied by the mode of action and the severity of the violence, and the presence of prolonged and profound shock. The duration of the shock is of greater importance than its intensity. A small and quick pulse and hurried respiration, while the temperature remains either normal or subnormal, associated with acutely severe, persistent, and localized pain, increased on pressure, indicate the serious nature of the injury. Bloody vomit or stool, rapid tympany, the evidence of percussion, are inconstant signs, and help us but little. The jejunum and ileum are the portions of intestine most frequently ruptured, and the rent will generally be found just behind the part of the abdomen which has been

struck,—a fact which can easily be verified by experiment. In about fifteen per cent. of the cases more than one loop of intestine is damaged, and in that case the injury generally occurs in superimposed coils. It is difficult at first to distinguish the syncope induced by hemorrhage from the shock caused by a ruptured intestine. In the early period we shall have to arrive at a diagnosis from the nature and violence of the injury and the general condition of the patient. When peritonitis is declared, an exploratory operation is urgently indicated, as collapse comes on very quickly, sometimes very suddenly, and a few hours' delay may negative all prospect of recovery.

Absolute rest has hitherto been the chief indication for treatment. But cases do arise in which abdominal section should be practised, and an attempt made to discover and deal with the visceral wound, arrest the bleeding, and clear away the clots and extravasated blood. We should interfere when we possess a reasonable belief that the intestine is ruptured. We may in some cases properly propose laparotomy as a means of diagnosis, and, indeed, when intestinal rupture is suspected, the operation should be performed at once to afford a good prospect of success. Exploratory laparotomy has no very serious inconvenience, and should be adopted in those cases where there are reasonable grounds for believing the intestine has been damaged, as in no other way can effective assistance be rendered to the patient. At a later period we have not only the ruptured intestine to deal with, but a septic peritonitis, which produces the most profound depression, and often necessitates an undue curtailment of some essential step in the operation, or occasions the death of the patient before its completion. Extreme collapse, a long interval from the time of the injury, or severe coexisting damage to the spleen, liver, or pancreas, of course contraindicate operation. The incision should be made in the middle line in all cases, and at the level which will afford readiest access to the seat of the injury. It is desirable to make it long enough to permit the surgeon to reach without difficulty every part of the interior. According to circumstances, we may then decide to suture the intestinal wound, resect the injured portion of the bowel, or make an artificial anus. The same objections hold in regard to the latter that obtain in respect of artificial anus after gunshot injury. Where it is at all practicable, it is best to finally close the opening in the intestine and also the external wound.

THE ADVANTAGES OF ANTIFEBRIN.

MR. J. K. MURRAY recommends antifebrin as possessing advantages over other antipyretics on the following grounds (*British Medical Journal*, April 23, 1887) :

Antifebrin seems much more powerful than quinine, kairin, or antipyrin. It equals antipyrin in the duration of its effects, and in this respect surpasses quinine or kairin. It is only excelled in the quickness of its action by the external application of cold. Its effects are evident within an hour, and they last from ten to twelve hours when a full dose has been administered. When administered for a long time, the dose must be increased. It produces profuse sweating and redness of the cheeks; it diminishes the pulse-rate, and distinctly increases arterial tension. He found no depressing effects follow its administration, even when full doses were given. Antipyretics belong to two great classes,—namely, those which diminish tissue-metabolism; and, secondly, those which increase the loss of heat. From the sweating it produces and the rise in arterial tension, one might conclude that antifebrin belongs to the second class as well as to the first one. This might explain the quickness of its action, as antipyretics of the second class act more speedily than those which diminish tissue-metabolism.

KÉFIR.

We take from *Le Pratique Médicale*, No. 10, the following account of the preparation and use of this beverage, which in some respects is much like koumiss.

It can be made from the milk of different animals, but it is generally made from cow's milk. Fermentation is excited by the presence of the kéfir, which is a species of mushroom, white when fresh, and yellow when old and dry, compact, elastic, and about one-fiftieth of an inch in diameter.

Chemically it is composed of water, fat, peptone, and nitrogenous material.

Examined microscopically it is composed of the rods and cells of beer-yeast.

It is found in the mountains of northern Caucasus near the snows. The natives believe that it is produced by the bushes which grow upon the mountain-tops. It is probable that the first origin is in the great number of bacteria which circulate in the atmosphere, and whose soil of development is furnished by the curds of coagulated milk.

At the beginning of the preparation of

kéfir the grains should be allowed to swell in tepid water for five or six hours,—2 teaspoonfuls to a tablespoonful of kéfir grains; they should then be washed in cold water and put in half a glass of fresh milk, which is changed every three hours. The grains, which were yellow, become white, and are then ready for the preparation of kéfir.

This is done by placing the white grains in a quart of fresh cow's milk, and the whole placed in uncorked bottles and exposed to a temperature of about 45° F., and frequently shaken. The milk begins to ferment soon, and in seven or eight hours the mass is fermented. The kéfir grains are removed by filtering through muslin, the liquid replaced in bottles, which are only partly filled, and carefully corked.

The milk is left at a constant temperature, and shaken every two or three hours. Fermentation continues in spite of the absence of the ferment, and in twenty-four hours the drink is ready. The grains of kéfir may be washed and used indefinitely.

Kéfir is richer in albumen than koumiss, less alcoholic, and less acid.

The following table of analysis shows the composition of milk, koumiss, and kéfir:

	Cow's milk.	Koumiss.	Kéfir.
Albumen	48	11.2	38
Butter.....	38	20.5	20
Sugar of milk.....	41	22.	20
Lactic acid.....	—	11.5	9
Alcohol	—	16.5	8
Water and salts.....	873	918.3	905

SULPHATE OF SPARTEINE.

M. MASIVS, of Brussels, having been engaged in investigating the physiological effects of sulphate of sparteine, has come to the following conclusions: 1. In small doses it does not modify the carotid pulsations in dogs. 2. In moderate doses it diminishes the irritability of the pneumogastric, accelerates the pulsations, which decrease in amplitude, and at the same time suppresses the periodical respiratory variations. 3. In poisonous doses it induces paralysis of the pneumogastric, also asphyxia, and, as a consequence of asphyxia, a change in the pulsations, which become larger and less rapid, and then quickly smaller and smaller, till they take on the characters of "alternate pulse," and finally cease. 4. The blood-pressure decreases only a short time before death. 5. It exerts in the healthy subject no effect on the urinary secretion. 6. In disease its effect on the heart is uncertain,

as well as its effects on the urinary function and on the subjective condition of the patient. —*The Lancet*, May 7, 1887.

THE EXPLORATION OF THE BLADDER BY THE SUPRA-PUBIC METHOD.

At a recent meeting of the American Surgical Association, DR. F. S. DENNIS read a paper on the above subject. He said the supra-pubic operation of to-day is practically the same as the old operation: the only change has been an improvement in *technique*. The first reported operation was that of Franco, in 1561. From that period to 1879 cases were not numerous, but from 1879 to the present time the operation has been done with such success as to attract attention throughout the world. The time is not far distant when practically the only two operations for vesical calculus will be supra-pubic lithotomy and litholapaxy. Supra-pubic lithotomy is simple in *technique*, safe in execution, free from injury to the reproductive organs, radical in results, curative in application, and brilliant in statistics. The many serious accidents attending the lateral operation are entirely avoided.

Technique of Operation.—For a few days before operation a milk diet should be employed. The day previous to operation the bowels should be moved with castor oil, and on the morning of the operation an enema should be used so as to empty the rectum for the introduction of the rubber bag, and the abdomen should be washed with an antiseptic solution. After the patient has been etherized, the surgeon should introduce a rubber bag into the rectum, above the internal sphincter, into which twelve ounces of warm water are to be introduced. This quantity will have to be increased or diminished according to circumstances. The danger of rupture of the rectum in elderly people and in young boys should be borne in mind. The urine should be withdrawn, and six ounces, more or less, of an antiseptic solution introduced into the bladder. The catheter may be left in the bladder and stopped with cork, and this will serve as a guide to cut upon. The distention of the rectum and bladder increases the distance from the pubes to the anterior cul-de-sac of the peritoneum to three inches. The incision should be made in the median line, and should extend for three or four inches above the pubes. When the transversalis fascia is reached, the use of retractors (on the principle of the eye-speculum) facilitates the operation. Having divided the

fascia, the end of the catheter can be felt and cut upon as a guide. The bladder may then be seized with two tenacula and opened. Where free exploration is desired, sutures are introduced on each side of the incision. The stone is removed either with the fingers or forceps. The bladder may then be washed out. A catheter should be introduced through the urethra, but not left longer than twenty-four hours, on account of the danger of exciting traumatic urethritis. In most instances the wound of the bladder should be left open. In cases of calculi the condition of the vesical tissues is such that primary union is unlikely. In certain other conditions, such as rupture, the wound may be closed, for here the condition is different. The abdominal opening is to be closed and a tube introduced.

The operation is indicated (1) for hard, large calculi, and in persons suffering with paraplegia and deformities rendering lateral lithotomy difficult; (2) for removal of certain foreign bodies, such as hair-pins, etc., or for the treatment of chronic cystitis; (3) in cases of tight stricture, fibroma of prostate, tumors of the bladder; and (4) for rupture. In its extraordinary simplicity, its reduced mortality, its freedom from danger, and its safety for the general practitioner, it compares well with litholapaxy.

The speaker had collected one hundred and twenty-four cases of supra-pubic operation for stone done since 1879. Previous to this date the rate of mortality was thirty per cent. Since then the mortality has been reduced, there being eighteen deaths, a mortality of fourteen per cent. Seven of these deaths may be justly excluded, giving a mortality of nine per cent. According to Sir Henry Thompson's statistics, the death-rate from the lateral operation is twelve per cent.; according to the same authority, the mortality of lithotomy is six per cent. In considering the mortality of this operation, two facts are to be considered. The mortality may be improved by more rigid antiseptic precautions. The second fact is that the operation has been limited to the largest stones. When the smaller stones are included the death-rate will be reduced.

Specimens and models showing the position of the bladder under various conditions were then shown.—*Phila. Medical Times*, May 28, 1887.

CARBOLATE OF MERCURY IN SYPHILIS.

DR. KARL SHADEK, of Kieff, being anxious to try the effects of carbolate of mercury,

which has been strongly recommended in syphilis by Professor Gamberini, requested M. H. Brandt, a pharmacist in Kieff, to prepare some for clinical use. This he did by precipitating a very dilute solution of bichloride of mercury with a concentrated alcoholic solution of carbolate of potassium. A yellowish precipitate was obtained, which, after being frequently agitated with the liquid for twenty-four hours, assumed a whitish appearance. It was filtered and washed with distilled water till the washings showed no traces of chloride. It was then transferred to a fresh filter-paper and dried under a bell-jar. In this way a nearly white, tasteless, amorphous substance was obtained, which was scarcely acted upon or dissolved by cold, but was readily soluble in boiling hydrochloric acid. The name given to it by Dr. Shadek is "hydrargyrum carbolicum oxydatum," and he has been using it in his private practice for several months. At first he gave it in the form of pills, one of which, containing about an eighth of a grain, was ordered three, or occasionally four, times a day. It was well borne, and did not interfere with the digestion. In some cases the treatment was continued for six or eight weeks, without producing colic or other disagreeable symptoms. The total number of syphilitic cases in which it was given internally was thirty-five (twenty-six men, six women, and three young children). In five of these there was swelling of the gums and salivation. Mercury was found in the urine after the third dose. Its therapeutic value was especially remarkable in macular and tubercular syphilides and in syphilitic psoriasis of the palm and the sole. Syphilitic rash and slight relapsing forms yielded to the treatment in from two to four weeks; in syphilitic affections of the mucous membrane, and in papular and pustular eruptions, from four to six weeks were required. Multiple enlargements of glands were but little affected by it. In the case of children from two to four years old, doses of about the fifteenth of a grain were well borne twice a day.—*The Lancet*, May 7, 1887.

THE TOPICAL TREATMENT OF TUBERCULAR PHTHISIS.

The researches of Koch and others demonstrate that bacilli are found in larger or smaller numbers in all forms of tuberculosis, and further, that some idea of the extent of the phthisical process may be determined

from the number of bacilli. It was found that the bacilli are more abundant where there was recent caseous infiltration, and in the interior of cavities whose walls were undergoing rapid softening. When the walls of the cavities are firm and indurated the bacilli are few in number, and they are fewest in the cicatricial contracting and pigmented lung-tissue. By examining the sputa of the phthisical patient much light may be thrown on the condition of the lungs. We may surmise that the fewer the bacilli the less the destruction, and *vice versa*. If we admit that bacilli are the cause of tuberculosis, bacillicides are naturally indicated. The experience of various physicians of the favorable results obtained from the use of bacillicides at any rate warrants their employment, even though they may not admit that the bacilli are the causation of the disease. Many bacillicides have been recommended; among them is corrosive sublimate, and this Dr. J. L. PORTEOUS (*Edinburgh Medical Journal*, May, 1887) in his experience has found to be the best.

Various modes have been suggested for applying the remedies; inhalation of the spray containing the bacillicide being the most effectual, as it gets directly to the part affected and retains the original strength of the solution.

The method which Dr. Porteous employs is to use a spray-producer with a reservoir graduated to hold the exact quantity to be inhaled at one sitting. The patient is then directed to deeply inspire at the same time that the ball of the vaporizer is squeezed. By this means the vapor is drawn directly into the lungs and is in no way diluted before reaching the part affected. This process is repeated every four or six hours. Dr. Porteous reports three cases in which extremely favorable results followed this method of treatment.

THE PHYSIOLOGICAL ACTION OF HYDROCHLORATE OF HYOSCINE.

At a recent meeting of the Biological Society, M. GLEY communicated the results of his experiments on the physiological action of hydrochlorate of hyoscine. A minim of a one per cent. solution of this substance, when dropped into the eye of a dog or rabbit, produced in seven or eight minutes a marked dilatation of the pupil. In man the dilatation of the pupil and the paralysis of accommodation remained nearly five days after the application of one single drop of a one per cent.

solution of hyoscine. The other eye, contrary to what took place in the rabbit, was in no way influenced by the drug. M. Gley recommends the drug on account of the rapidity of its action and its feeble toxic effects; fifteen centigrammes of hyoscine, injected under the skin of a dog, produced no serious accident. —*The London Medical Record*, May 16, 1887.

COLLAPSE FOLLOWING STRAPPING OF THE TESTICLES.

Strapping of the testicles after the evacuation of hydrocele fluids is a procedure which is frequently employed, but which from a case recorded by Dr. J. SMYTH in the *Indian Medical Gazette* for January, 1887, is not entirely free from risk.

Dr. Smyth relates the case of a young man in whom the testicle was lightly strapped and supported after evacuation of the hydrocele. The next day the patient continued well, and as the strapping caused no discomfort the operation was repeated on the right side, which was strapped like the left. The next morning the patient was found in a state of collapse, able to speak only in whispers; he was very pale and bathed in cold sweat, which stood out in great beads on his face and saturated his bedding. The extremities were cold, and the patient complained of numbness of the arms. He pointed to the hypogastric region as the seat of his distress, but did not complain of pain elsewhere. The pulse was small, frequent, and intermittent. The strap-pings were removed and stimulants given, with an immediate relief of the symptoms.

ON THE PRACTICAL VALUE OF OUR PRESENT METHODS OF TREATING THE UPPER AIR-PASSAGES.

The subject was one referred for discussion to the main body by the Section in Laryngology of the New York Academy of Medicine, the discussion being opened by a paper by Dr. Francke H. Bosworth. (*Phila. Med. Times*, May 28, 1887.)

Dr. BOSWORTH said it is now thirty-three years since Garcia demonstrated the feasibility of examining the interior of the larynx during life, and Czermak, availing himself of Garcia's teachings, presented to the medical profession a new method of treating disease and inaugurated a new specialty. He thought it was highly proper to stop for an instant and take an account of what progress had been made in this specialty. The early days of

this specialty were days of instrument-invention, and so rapidly did the number of appliances and ingenious devices for treating diseases accumulate that the impression grew that we treated disease by machinery. Nor was this impression ill founded. Dr. Bosworth thought that when we knew little about the treatment of these diseases our machinery was very extensive. As our knowledge increased the machinery disappeared, until now it might be carried in a hand-satchel.

He then spoke of special methods of topical applications in the treatment of the larynx, lower pharynx, vault of the pharynx, and nasal passages. Although speaking of the treatment of these separately, his conclusions with regard to each were the same: namely, that so-called chronic catarrhal inflammation of the larynx, lower pharynx, and vault of the pharynx was due to disease of the nasal passages; that chronic nasal catarrh was due to nasal obstruction, and the only radical means of relief consisted in removing such obstruction. This was to be accomplished by the use of the knife, saw, snare, or cautery. It was true the spray and the douche had their uses, but in no case had they ever cured chronic laryngitis or so-called chronic pharyngeal catarrh. Their action was only palliative and cleansing. No local applications directly to these parts ever cured such inflammation. It was not claimed for them by anybody that they would cure tumors, syphilis, tuberculosis, or paralysis. He had before said that the lower pharynx was in no sense a part of the air-tract. As he had but recently written on the subject of the surgical treatment of obstructions of the nose, he would now devote most of his remarks to the action of the cautery.

He claimed that the cautery destroyed only the superficial layer of the lining membrane of the obstructed nasal cavity, and that therefore its action in overcoming obstruction was not due to its destruction of tissue, but to its coagulation of the superficial structures, their contraction upon the dilated blood-vessels and hyperæmic tissues, in the manner that a film of collodion acts. This being the case, he claimed that the galvano-cautery was an expensive, especially a cumbersome, apparatus; one which could not be used with delicacy and exactitude; which was not without danger; and consequently its use should be dispensed with and chromic acid substituted. The latter possessed every advantage of the galvano-cautery and platinum wire, and had not their disadvantages.

With regard to apparatus for making spray, he showed a hand-atomizer with a single rubber bulb, which he claimed was as effective as the most costly air-pump and receiver; and, for examinations, a head-mirror two and a half inches in diameter was as good as the more costly.

DR. A. H. SMITH continued the discussion with a brief paper, in which he said there was growing scepticism as to our ability to cure all cases of so-called catarrh of the upper air-passages. Then, referring to the benefit to be derived in the treatment of chronic or sub-acute affections of the lining membranes of those passages by the employment of anodynes and disinfectants, especially by weak solutions of carbolic acid, he pointed out the limitations of such benefits. To show that surgical methods were not indicated in all cases or capable alone of curing diseases of the upper air-passages, he quoted the statistics of certain institutions, going to show that out of thirteen hundred and fifty-one cases only twenty-seven per cent. were considered as calling for an operation. It followed that in over seventy per cent. of the cases other treatment than surgical was required. Any person familiar with the subject must have seen patients with chronic nasal catarrh returning month after month, and year after year, to dispensaries and institutions, having nowhere been able to find complete and radical relief. This was not true alone of the specialty of laryngology and rhinology. The same thing was seen at clinics for diseases of women,—patients returning for months with chronic uterine catarrh, etc. He believed that a change of structure took place; that the vital conditions were altered, and they could not be restored by any measures which we had yet adopted or perhaps would ever discover. In other words, there were certain difficulties and limitations inherent in the case not chargeable to faulty methods of treatment or to want of skill. He had long since ceased to expect, as he had ceased to promise, complete and permanent cures.

DR. WILLIAM H. THOMSON discussed the subject from the stand-point of the general practitioner. In his opinion, the treatment of chronic diseases of the upper air-passages should be directed chiefly by two principles: first, by taking cognizance of cutaneous nerve associations in the causation and perpetuation of inflammation of the mucous membranes; and, secondly, local disinfection.

Organs which were in symmetrical pairs,

such as the hands, feet, ears, and eyes, were so closely associated in vaso-motor relations that the same effect, as far as their circulation was concerned, was produced in both by an impression made on only one member of the pair. Second, there was a close relation between the sensory nerves of the skin and the vaso-motor apparatus of the viscera immediately beneath. Third, there were special relations between the vaso-motor functions of one part of the body and the nerves of sensation in a particular distant part of the body. Wet feet, for instance, might check menstrual flow. This relation also existed between the feet and the larynx, and between the nerves at the nape of the neck and the circulation in the nose.

Unfortunately, we have few vaso-motor tonics. In colds it would be of benefit to apply cold water to the nape of the neck on rising, keeping the hair dry, and to apply cold salt water to the throat. The neck and shoulders should be washed in cold water, dried, and then rubbed with sweet oil. Draughts of air were more harmful than a walk out in the cold air. Exposure of a portion of the surface of the body, especially at night, should be avoided. As to special covering, a thin woollen undergarment should be worn, and over that a perforated buckskin shirt. Buckskin drawers, perforated, might also be worn. He knew of no special clothing so beneficial as this. Chest-protectors, etc., which covered only a part of the surface, were worse than useless.

Speaking of disinfectants and their application in the treatment of diseases of the upper air-passages, he said it was hard to resist the belief, from the evidence already given, that the product of inflammation, as such, was always the result of infection. As soon as a particular tissue began to lose its normal amount of vitality, the enemy (micrococci) found it out and began its work. A practical deduction was that, as the onset of disease could be prevented only by excluding germs, so all chronic mucous inflammations could be got rid of only by driving out such germs after they had obtained access to the tissues. Two methods were to be adopted: first, strengthen the vitality of the parts; second, apply disinfectants directly to the affected parts. The greatest advance, he thought, would be made in the discovery of disinfectants and how best to use them.

DR. H. H. CURTIS had deduced the following conclusions from the observation of a thousand cases of disease of the upper air-

passages. In all cases of nasal stenosis from deflection of the nasal septum, etc., there was subacute or chronic inflammation of the lining membrane of those passages, this inflammation extending also down to the pharynx, and here giving rise to glandular hypertrophy. This affection of the posterior wall in the faucial cavity was due to mouth-breathing, and disappeared on opening up the nasal cavities. Any treatment directed to this glandular hypertrophy without treatment of the nasal passages was without success. Disease of the ethmoid cells was generally due to hypertrophy of the middle turbinated body and consequent occlusion and prevention of exit of the ethmoidal secretions. The treatment consisted in the application of chromic acid to the thickened middle turbinated body in order to reduce the obstruction and allow free access of air and outlet for the secretions. He employed this escharotic to the exclusion of others, and he would be unwilling to exchange it for all the sponges, sprays, etc. Its use was followed not only by clearing up of the nasal passages, but also, in consequence of this, by disappearance of the granulations referred to, of laryngitis, pharyngitis, huskiness of the voice. The chromic acid should be used carefully, but he had not seen any bad results from it. The sooner the profession ceased to apply strong astringent solutions and nitrate of silver to the upper air-passages, and gave proper attention to restoring the respiratory functions of the nasal passages, the sooner would laryngology be placed on a higher plane and relief given to countless thousands suffering from so-called post-nasal catarrh.

DR. W. C. JARVIS thought the spray was undoubtedly of great utility when properly employed. Pound-pressure, he said, meant nothing; but the dimensions of the pneumatic tube and the pound-pressure being given, we had everything. Cocaine would act better, more efficiently, and a less amount would be required when used by the spray than by any other method. Another remedy to be used from the spray was rhigolene, and it was often to be preferred to cocaine, especially where the latter failed to produce anæsthesia. He could not do without the spray for cleansing purposes. The coarse spray possessed nearly all the advantages of the douche. Powders were best applied fine by the compressed-air spray. Iodoform was best tolerated. Chromic acid and nitric acid had their uses. But chromic acid was a treacherous drug. Doubtless it was of benefit in

some cases ; but it should not be used for the relief of hypertrophy of the lining membrane. It was a specific in its action on papillomatous tissue. Regarding the comparative value of surgical with other methods, he thought the decision had been pretty well settled in favor of the former. Where weeks and months were required to cure by local applications, relief and cure came from a single sitting when the snare, saw, or cautery was used. The apparently increased discharge in nasal catarrh was due to accumulation by obstruction, not to hyper-secretion. He spoke of the value of applications of vaseline or other unguents and agents for cleansing and protective purposes.

PYORRHŒA ALVEOLARIS.

MR. NEWLAND PEDLEY, F.R.C.S., read a paper at the Odontological Society upon the above subject. Pyorrhœa alveolaris is characterized by conditions as follows : The mucous membrane, especially that adjacent to the teeth, is deeply congested, tumid, and thickened, and detached from the necks of the teeth and from the roots. A thick, fetid discharge may often be pressed up between the teeth and mucous membrane, which gives to the breath a very repulsive odor. Later, the alveoli become absorbed, and at times more or less denuded, while the fangs of the teeth become coated with a layer of thin, hard, green-brown tartar. Ultimately, the disease progressing, the teeth, one after another, drop out. The pathological changes which take place are hypertrophy of the mucoperiosteal fold around the teeth, accompanied by dilatation of capillary loops, enlargement of the papillæ, and rapid proliferation of epithelial cells. Later the gum becomes firm and contracted, and displays increase of fibrous tissue. The changes which go on in the socket have not been yet satisfactorily worked out, but the examination of the jaws of some carnivora which were apparently affected with pyorrhœa alveolaris would lead to the supposition that there is osteitis of the alveolar process spreading towards the apex of the socket. There are many differences of opinion as to the causes, some maintaining that it is of parasitic origin and due to a specific bacillus, but there is no good proof of this ; others that it is catarrhal, and an extension of inflammation of the mucous membrane ; others that it is due to the irritation of small deposits of hard tartar under the edge of the gum, but this is plainly not the

case, for the disease may be far in advance of the deposit, and in some cases there is not any to be found. It is probably due to some constitutional condition, and the fact that it is often symmetrical, and frequently hereditary, gives support to this view. It occurs in the mouths of patients whose health has been undermined by debilitating influences and injudicious habits of living ; it is a common sequel of malarial fever in America ; young persons recovering from eruptive fevers are sometimes subjects of pyorrhœa alveolaris ; and frequent pregnancies are a fruitful source of the disorder. Attention has been lately drawn to the shedding of the teeth in tabes dorsalis, but it does not by any means seem to be a constant symptom. Mr. Bland Sutton has found that premature loss of the teeth is a very common feature in cases of rheumatoid arthritis in animals, and has also met with it in mollities ossium and other wasting diseases. Magitot, who views the alveolar-dental periosteum as a ligament, and not of the same nature as osseous periosteum, calls the disease symptomatic alveolo-arthritis, and mentions especially as causes chronic Bright's disease and glycosuria, in which latter, he says, the phenomenon is absolutely constant.—*The Lancet*, May 7, 1887.

THE TREATMENT OF MIGRAINE WITH A DOMESTIC REMEDY.

RABON, of Berlin, writes as follows in describing his experience with this treatment in the *Therapeutische Monatshefte* for April, 1887 :

"It is no wonder that against so common and annoying an enemy as migraine an immense array of lauded remedies are advanced. Among these we find some powerful drugs,—nitro-glycerin, amyl nitrite, aconitine, cocaine, and others,—and also many remedies whose application is inconvenient, as massage and electricity. It is furthest from the purpose of the writer to undervalue the effect of these agencies. If a new remedy is proposed the excuse for its introduction must be that it is simple, harmless, and easily obtainable.

"As Nothnagel some years ago reported good results in treating epilepsy with common salt, it occurred to me that migraine could possibly be prevented by small doses of this agent. I accordingly ordered a young man suffering from 'petit mal,' whose seizures were preceded by a well-defined aura, to keep common salt with him, and at the first indication of the aura to take a convenient quantity. The order was followed, and proved successful in every instance. En-

couraged by his success, an aunt of the patient, who had suffered severely for years from migraine, which was preceded by unpleasant gastric sensations, began to take salt to cure her migraine. She took a half or a whole teaspoonful, and drank a little water after it. This treatment was regularly successful when the attack was just beginning, and a fully-developed attack was stopped in half an hour.

"After this case I felt encouraged to try this simple remedy in similar cases, and the results were so good that I feel justified in recommending the remedy. Where the attacks of migraine are attended by symptoms of gastric distress salt is especially efficient, if given promptly.

"My record of cases up to the present embraces only six in whom a positive result was obtained. I hope, however, to attract the attention of others to the use of the remedy. An explanation of the way in which the result is obtained I hope to furnish in the future. Its power in eliciting reflex action seems to me a natural explanation of the effect."

THE USE OF FUMING INHALATIONS IN ASTHMA.

The relief which a well-arranged inhalation affords in the dyspnoea of bronchial asthma is indisputable.

SIR JAMES SAWYER, in the *Birmingham Medical Review* for May, 1887, has prescribed the following fuming inhalation for asthmatic patients with marked success:

R Potassii nitrat., \mathfrak{zss} ;
Pulv. anisi fruct., \mathfrak{zss} ;
Pulv. stramonii fol., \mathfrak{zj} . M.

A thimbleful of the powder placed on a plate is pinched into a conical shape and lit at the top; it burns with a smouldering flame like a pastille, and is held near the patient, who inhales the smoke. The writer states that this method of treating the dyspnoea of bronchial asthma is very marked in its good results in a large proportion of cases. The remedy, however, is only palliative of the asthmatic paroxysms, but it is in these cases that we are often called upon to give prompt relief. For the reduction of the frequency and severity of the asthmatic attacks many other resources are of course favorable in the direction of dietetic, climatic, hygienic, and medicinal therapeutics.

TWO CASES OF RUPTURE OF THE UTERUS; LAPAROTOMY; RECOVERY IN BOTH CASES.

DR. SIMON LEDERER, of Asch, in Bohemia, reports these cases as follows in the *Prager Medicinische Wochenschrift*, No. 15:

In the first a contracted pelvis, whose conjugata vera was not sufficiently shortened to indicate the use of artificial means for completing labor, existed. The patient's general condition and strength were good, and the physician deemed the labor progressing satisfactorily, and left the patient, a primipara, to return in a few hours. On his return, he was informed by the midwife in attendance that the labor-pains had ceased a half-hour previous; the patient was then asleep. An examination revealed the foetus partly in the abdominal cavity, and a hand prolapsed into the vagina. Laparotomy was immediately performed under deep chloroform-narcosis. A large, fully-developed child, with a large head, was removed. The abdomen was cleansed, and the uterus contracted well. A firm abdominal bandage was applied.

Recovery was complete in seventeen days. The entire wound healed by first intention, and but very moderate reaction followed.

Two years later the same woman was delivered, without the services of a physician, of a still-born child, after a rapid, easy labor.

The second case was that of a multipara, who had previously been delivered by the forceps, and had once borne spontaneously after a tedious labor. The pelvic measurements were normal. The uterine rupture was announced by the cessation of the pains and the expulsion of blood from the vagina. As the woman was in good condition, laparotomy was done at once. On the third day after the operation metro-peritonitis set in, which was combated by iced compresses over the abdomen, quinine and opium, free stimulation, and antiseptic douches. Rapid improvement followed, and the wound healed by first intention, except its lower angle, from which healthy pus was discharged, which soon ceased. Nine weeks after the operation, in the absence of the physician's care, the patient ate a large quantity of fresh, ill-baked bread. Peritonitis followed, with great prostration and collapse and death. A post-mortem examination could not be made, and the cause of the peritonitis was not discovered. It is possible that intestinal adhesions had formed, which were broken by the disturbance caused by the ill-digested food.

In the first case the child was found lying

with its back towards the abdomen of the mother, and was easily extracted.

In the second case, the rupture was in the posterior surface of the uterus, and the child was extracted with difficulty.

[The writer makes no mention, in his description of the operation, of suturing the uterus or performing Säger's operation. He seems to have performed the primitive Cæsa-rean section only.—TRANSLATOR.]

HOW SHOULD SANTONIN BE PRESCRIBED TO OBTAIN ITS FULL PHYSIOLOGICAL EFFECT?

DR. K. A. NORDERLING, of Rockford, Ill., communicates the following to the *New York Medical Record*, April 23, 1887: "After the introduction of santonin into the system, the urine will in a short time become of a cherry-red color. Santonin will give the same color when dissolved in an alkaline solution, or when heated to liquefaction with the addition of caustic potash. The drug, therefore, undergoes in the system a change similar to that produced by alkalis and heat. Santonin is insoluble in water and dilute acids, but dissolves in the saliva, the gastric, intestinal, and pancreatic juices. This solution in the gastric juice takes place so rapidly that the maximum dose is completely absorbed in the stomach, as has been shown experimentally by Lewin. But it has also been proved by experiment that santonin, when given in an oily solution, is not at all absorbed in the stomach, but the entire quantity passes into the intestine. It is evident that when the drug is given in powder it will be absorbed and taken up in the circulation before reaching the intestine, and consequently, in order to obtain its vermifugal effect, it must be administered in such a form that it will not be acted upon by the gastric juice. Küchenmeister has shown that the drug must be in solution, as he found that ascarides were not affected by santonin crystals floating in water, but were killed when brought in contact with an oily solution of the drug. In order, therefore, to accomplish its therapeutic object, it is necessary that santonin be in a form in which its vermifugal action can be exerted, and also that it reach the habitat of the parasite. To make the solution, any form of oil may be used, and the best effect is obtained by three grains of santonin dissolved in two ounces of oil, to be taken in four doses. It is also a good practice to add one drop of wormseed oil to each dose, as researches have shown that all ethereal oils

are poisonous to the lower organisms. If a movement of the bowels is desired, castor oil will be suitable, although not in too large a dose, because with strong peristalsis the santonin does not remain long enough in the intestine to produce the desired effect. About two drachms of the oil to each dose will be sufficient."

ALMÉN'S TEST FOR SUGAR.

Of all tests for sugar in urine, Fehling's is undoubtedly the most satisfactory. The only objection that can be urged against it is the difficulty of preserving it a sufficient length of time, so that unless recently prepared it may lead to fallacious results, owing to stale solutions having a tendency to throw down the suboxide of copper spontaneously when heated. This, of course, is a great disadvantage to practitioners, who may be seldom called upon to use the test, and are at a distance from manufacturing chemists from whom they may procure a fresh supply. To remedy this PROFESSOR ALMÉN, of Upsala, has improved the old bismuth test for sugar, and has prepared a solution which has the advantage of keeping unchanged for years, and being at the same time an extremely delicate test for sugar in urine. It consists of a solution of bismuth subnitrate, with caustic soda and potassio-sodium tartrate. In testing for sugar, the albumen, if present, must be first removed by precipitation by heat and acid, and one part of the solution treated with ten of the urine, when, if sugar is present, the bismuth will be deposited in a metallic state. The test is sufficiently delicate to detect sugar in the proportion of only .05 per cent. This test, as we have already said, is chiefly valuable on account of its preservative qualities, keeping well on board ship and in hot climates, though we doubt if it will supersede the use of Fehling's solution, especially as the latter is now supplied in hermetically sealed capsules which preserve the test for a considerable time.—*The Lancet*, May 14, 1887.

NUTRIENT ENEMATA.

EWALD, of Berlin, writes to the *Therapeutische Monatshefte* for April, 1887, his usual methods of preparing such enemata as follows:

In hospital practice an enema may be made most simply by beating up three or five eggs with four or five ounces of a fifteen or twenty per cent. solution of grape-sugar, and this

mixture may be carefully injected, as most convenient. If needed, starch solution, or a mucilage-water, may be added, or, if there exists much irritation, a few drops of tincture of opium. An injection of about eight ounces of tepid water, or solution of common salt, should precede the nutrient enema, and the latter should not be given until the bowel is thoroughly emptied; otherwise the nutrient matter may be at once rejected. Enemata should not be larger than eight or nine ounces, and it is better when this amount is given in two or three doses during the day.

When more elaborate methods can be followed, two or three eggs should be beaten with a spoonful of cold water. As much powdered starch as the point of an ordinary kitchen-knife will take should then be added, and a small cup, or half a large glass, of twenty per cent. solution of grape-sugar, which may be purchased at any chemist's. The whole should be gently heated, and a wineglassful of common red wine added.

The mixture should then be gently stirred or beaten, and the caution should be observed not to heat it so hot as to coagulate the egg albumen. When ready for injection the quantity of fluid should not exceed a half-pint.

If peptones can be easily procured, a teaspoonful of the peptone may be added to the solution of sugar; while advantageous, it is not absolutely needed, for eggs prepared without peptones are easily absorbed.

The enema should be given with a syringe whose terminal tube is long and flexible, or an irrigator, whose rectal tube is large and flexible, may be used. After taking enemata the patient should be kept quietly upon the back, or on the side, for some time.

METHYLAL.

Since the appearance of our issue of April 15, in which we published a summary of the results obtained by several investigators as to the action of methylal, it has been anew investigated by DR. M. MOTROKHIN (*The Lancet*, May 7, 1887). He found that in frogs hypodermic injections of from 0.2 per cent. to 0.3 per cent. of the animal's weight produced more or less profound anæsthesia, which, however, quickly passed away. The lethal dose for frogs was found to be 0.8 gramme. Reflexes were weakened, and with large doses temporarily abolished. Thus, after giving a frog 0.3 gramme of methylal, irritation of the central end of

the sciatic nerve during the period of complete narcosis produced no effect, but when the animal was aroused some reflex activity returned. Irritation of the peripheral extremity of the nerve showed that the drug had produced no effect upon its reflex action. Warm-blooded animals are more susceptible to the effects of methylal than frogs, a quantity equal to 0.25 per cent. of a rabbit's weight throwing it into a deep sleep lasting from one to two hours; with larger doses, loss of co-ordination in the movements was first observed, then the animal fell on its side, and remained in a state of narcosis for from three to four hours, after which it quickly recovered. The lethal dose was 0.45 or 0.5 per cent. of the animal's weight. The irritability of the cortex of the cerebral hemispheres was lowered both by hypodermic injections and by the inhalation of the vapor. Convulsions due to strychnine and picrotoxine in animals subjected to the action of a moderate dose of methylal were diminished in violence, but when the strychnine or picrotoxine was given in lethal doses death was actually accelerated by methylal. Methylal can be employed in the form of vapor for inhalation, or as a liquid for internal administration. When given hypodermically in an aqueous solution of the strength of 1 in 3, it is very painful, and the skin is apt to slough near the puncture. Dr. Motrokhin does not think methylal is likely to be of use in poisoning by strychnine and picrotoxine, except when only small quantities of these poisons have been introduced into the system. Regarding inhalations, two ounces may be inhaled, and only produce in addition to anæsthesia slight headache and dizziness. No experiments seem to have been made with a view to ascertaining the value of methylal as a surgical anæsthetic, but it does not seem to affect the heart's action perceptibly. Prof. Anrep noticed especially that the anæsthesia was more marked on the upper part of the body.

CHOLERA IN PREGNANCY.

DR. QUEIREL, of Marseilles, contributes an interesting article to the *Nouvelles Archives d'Obstétrique et de Gynécologie* for April 25, 1887, in which he reports thirty-five cases which he personally observed, and thirty-two cases whose records have been given him by others,—sixty-seven in all. Of these, thirty-nine died and twenty-eight recovered. Pregnancy was interrupted in twenty-nine, in thirty-eight it continued until the child was

born at term or the mother perished. The conclusions of Dr. Queirel are as follows :

Pregnancy is not a predisposing cause, but increases the gravity of cholera.

We do not know whether cholera is transmitted from mother to foetus; *in utero* the disease is very fatal.

It is a frequent cause of abortion, which does not lessen the severity of the disease in the mother.

The attack of cholera must be of unusual length if the woman does not die before aborting. Abortion from cholera is more frequent in the second than in the first half of pregnancy. A number of such prematurely-born children survive.

A large proportion of children born during the attack of cholera die from the disease in the first few days of their lives. Cholera occurring during the post-partum period is very severe.

The disease destroys lactation if established.

From a clinical stand-point the phenomenon most interesting is severe pain in the vertebral column and about the back.

The mortality among children was seventy-one per cent.

SALOL.

Salol, or salicylate of phenol, has been recently used with considerable success in Germany, both as an antipyretic and local disinfectant. GEORGI (*Berlin Klin. Woch.*, 1887, Nos. 9 and 11) found it useful as a dusting-powder in facial erysipelas; he mixed it with an equal quantity of powdered talc. He likewise employed it locally with advantage in angina, diphtheria, and stomatitis, first making a five per cent. solution in alcohol, and then mixing a small quantity of this with water. In a case of ozæna, the insufflation of a powder consisting of equal quantities of salol and talc every two hours removed the bad odor, though it did not cure the ailment, for he found it necessary to use also astringent irrigations. Given internally, he found it acting beneficially as an antipyretic in phthisis, typhoid fever, acute rheumatism, and other febrile ailments. In phthisis, doses of 7 grains were first given, and then larger quantities, until the effects desired were obtained. He found that 22 grains could be given for a dose, and seventy-five grains in nine hours, without any disagreeable results. In rheumatism it reduced the temperature and relieved the pains. He records favorable re-

sults of its administration in one case of sciatica and three of cystitis.

SEIFERT (*Centralb. f. Klin. Med.*, April 2, 1887) confirms Georgi's favorable report. He used salol as a wash or gargle, in ulceration of the tongue, stomatitis, angina, and diphtheria, first dissolving six parts of salol in one hundred of spirit, and then adding a dessert-spoonful of this solution to a glass of warm water. Seifert also used salol as a powder for insufflation, but he finds it less beneficial than iodol, because, though antiseptic and non-irritating, it does not adhere sufficiently well to mucous membranes and ulcerated surfaces.—*Medical Chronicle*, May, 1887.

EXTREME FREQUENCY OF PULSE AFTER PARACENTESIS.

An interesting case, in which extreme frequency of the pulse followed puncture of the abdomen for ascites, is reported and discussed in the *St. Petersburger Medicinische Wochenschrift* by PROFESSOR DEHIO, of Dorpat. The patient was a man aged 56, with cirrhosis of the liver. In addition to a considerable degree of ascites, there was general œdema and an old-standing hernia, but no heart-mischief could be detected, and the pulse was 86, regular, and of moderate tension. Immediately after the operation the man felt better, and was able to breathe more easily, and a slight rise of the pulse was then noted. The next day the face was pallid, and the patient complained of giddiness and prostration. The radial pulse had become 162, thready, and weaker; the second sound of the heart could scarcely be heard. This condition continued without any great alteration for five days, the pulse-rate varying from 180 to 150. No rise of temperature occurred, and the respiration was about 24. At Professor Kobert's suggestion two milligrammes of coronilin were introduced subcutaneously, which was shortly followed by a reduction of the pulse-rate to 80. A few hours later, however, it rose again to 182. The next day, without any repetition of the coronilin, and indeed without any assignable cause, the pulse sank to 84, and did not again rise to any remarkable extent. From this time, however, the patient's general condition became worse, and he died eighteen days later. The necropsy showed fatty degeneration of the heart and general diffused arterio-sclerosis. There was some hemorrhagic pachymeningitis and a good deal of clear fluid in the ventricles of the brain, the

cerebral substance being of moderate consistence, without any softening and containing less blood than usual. The cerebellum and medulla were in the same condition. The cause of the extreme frequency of the pulse was evidently not the disease of the heart and vessels, as this still existed at the time of death, or eighteen days after the pulse had resumed its normal rate. It must be looked for in the anæmia of the medulla, which doubtless followed the operation. Dr. Dehio proceeds to discuss the question whether this anæmia affected the heart by stimulating the accelerator (sympathetic) centre or by paralyzing the inhibitory (vagus) centre, and strongly inclines to take the latter view, quoting Nothnagel, who, in a recent article, says that when an extreme frequency of pulse is found associated with regularity of the intervals between the beats, a weak cardiac impulse, and an absence of other symptoms, or the existence of such as point to an incomplete emptying of the ventricles, paralysis of the inhibitory apparatus is indicated. Exactly these conditions existed in this case, as shown by its history and the sphygmograms obtained, which were of a hyperdirotic type. Traube has also described a case of this rare condition. An old man, with phthisis, was unable to sit up in bed from the extreme frequency of pulse produced by the anæmia which the upright posture caused in the medulla, which, according to Traube, induced paralysis of the inhibitory apparatus, "the action of which is more easily suspended than that of the respiratory and vaso-motor centres." Another reason given by Dr. Dehio for the view he takes is that it is hardly possible that stimulation of the accelerator apparatus should have been kept up for so many days without any sign of the centre becoming fatigued, the interval between the pulse-beats not having altered at all. The fact was that when the abdomen began to refill the medulla became engorged with blood and the vagus resumed its proper functions. Nothnagel has pointed out the analogy between the sudden loss of regulating power of the vagus, and the sudden loss of consciousness in epilepsy and fainting which is produced by very slight interference with the blood-distribution.—*The Lancet*, May 28, 1887.

IMMUNITY BY INJECTION OF CHEMICAL BODIES.

DR. L. C. WOOLDRIDGE recently communicated to the Royal Society a method by which

he had been able to protect rabbits from anthrax, which is of considerable interest in connection with the general question of the nature of protection in this and other diseases depending on micro-organisms. The method consists in cultivating the anthrax bacillus in an alkaline solution of a peculiar proteid body which can be obtained from the testis and thymus gland. The growth is not abundant, and, after two days at 37° C., it is removed from the culture-fluid by filtration. A small quantity of filtered liquid is injected into the circulation of a rabbit, and the animal can then withstand the inoculation of extremely virulent anthrax blood. The bacillus itself grown in this peculiar culture-fluid has no protective influence; it either kills or it has no effect. The result is extremely curious, for hitherto protection against zymotic disease has been effected by the communication to the animal of a modified form of the disease against which protection is sought. In Dr. Wooldridge's experiments the protection must be produced by some chemical body the product of the activity of the bacillus. The observation belongs to a new order of facts, and appears to fall in with M. Pasteur's theory as to the method in which immunity to hydrophobia is produced by inoculation of the spinal cord of rabid rabbits. Both find some support in Professor Cash's experiments with perchloride of mercury, in which it was shown that after animals had taken a sufficient quantity of the drug, they were no longer liable to anthrax.—*The British Medical Journal*, May 21, 1887.

PATHOGENY OF GASTRIC ULCER.

The precise pathogeny of chronic ulcer of the stomach is one of those undetermined questions which have led to considerable speculation, with comparatively little profit. The position, form, and nature of the ulcer have done more than any positive demonstration of the vascular lesion to favor the current doctrine of its dependence on arterial blocking. But every one knows the difficulties in the acceptance of this view, not the least being the comparative frequency of the disease in the female sex, and the great preponderance of cases where the ulcer is solitary and seated on the posterior surface near the lesser curvature. DR. DECKER, of Würzburg, has the last word on the subject (*Berl. Klin. Wochenschrift*, No. 21), and he advances evidence in support of the initial lesion being traumatic, or rather thermal. Thus, he believes that the contact of hot thickened fluids

with the gastric mucosa excites hyperæmia, which becomes localized, and may lead to venous stasis and hemorrhage in a limited territory, with all the subsequent necrotic changes. He supports his view not only by reference to the clinical history of cases of gastric ulcer (he points to the great prevalence of gastric ulcer among cooks, who habitually test the flavor of their dishes when very hot), but by two experiments on dogs into whose stomach food heated to 50° C. was introduced. In one of the animals a patch of hyperæmia, with hemorrhage between the gastric mucosa and muscularis near the lower curvature, was found; in the other, a deep ulcer of characteristic shape and position had been produced.—*The Lancet*, May 28, 1887.

ACTION OF HYOSCINE ON THE EYE.

DR. O. WALTER, of Dorpat, has published a series of observations on the action of hyoscine on the eye. This body produces some toxic effects very similar to those produced by atropine,—viz., dryness of the throat and dilatation of the pupils; but, unlike atropine, it causes drowsiness and languor; it also sometimes causes nausea and giddiness. Until lately little has been known of the effects of hyoscine on the eye, but within the last few months two other Dorpat students, working under Professor Kobert's direction, have paid some attention to the subject,—one of them, Dr. Sohrt, having published a paper on the general, therapeutic, and physiological effects of hyoscine. Hirschberg and Emmett had, however, remarked the mydriatic action of this subject. Dr. Walter experimented on animals by instilling hyoscine into one eye and atropine into the other, and found that a drop of an exceedingly attenuated solution produced distinct dilatation, acting both on the pupil and on the accommodation much more rapidly than atropine. The dilatation passed off more quickly than that produced by atropine, but the paralysis of accommodation persisted about as long as that produced by an equally strong solution of atropine. No decided effect was remarked on the intra-ocular pressure, but in patients with chronic glaucoma the regular application of hyoscine certainly produced an improvement in the sight and an enlargement of the field of vision. Slight toxic symptoms were produced by two drops of a one per cent. solution. The author recommends repeated applications of a weak solution in preference to a single application of a strong one.—*The Lancet*, May 28, 1887.

THALLIN IN THE TREATMENT OF GONORRHOEA.

According to the Swiss correspondent of the *British Medical Journal*, May 21, 1887, PROFESSOR E. KREIS, of Zurich, has recently carried out in Professor Kleb's laboratory a series of experiments on the influence of thallin on gonococci. He found that a solution of sulphate of thallin of a strength of from four to one-half per cent. completely destroyed the microbes. It may also be mentioned that the drug proved a powerful germicide in regard to the anthrax bacillus and staphylococcus aureus. In view of Dr. Kreis's statement, PROFESSOR GOLL, of Zurich, treated several cases of gonorrhœa, both acute and chronic, with injections of solutions of thallin of various strengths. When given at the beginning of the inflammatory stage injections of a two to two and one-half per cent. solution of the sulphate caused rapid subsidence of the inflammation and quickly changed a purulent into a milky, sero-mucous discharge. In a group of cases seen on the fifth, eighth, or ninth day of the affections, the same injection, repeated twice or thrice a day for six or ten successive days, cured the patient in from eighteen to twenty-five days. The thallin treatment seemed, to a certain degree, to prevent such complications as epididymitis, cystitis, irritability of the bladder, etc. In cases of gleet, Professor Goll obtained good results from irrigation of the urethra by means of a Nélaton catheter, with a one or one and one-half per cent. solution of thallin. Internal administration of the drug in doses of 25 centigrammes every three hours cured a very bad case of gonorrhœal cystitis with epididymitis in five days. In another man, aged 70, long-standing cystitis of gonorrhœal origin was speedily relieved by the internal use of the drug in daily doses of 25 to 30 centigrammes.

THE RELATION OF CERTAIN FORMS OF HEADACHE TO THE EXCRETION OF URIC ACID.

At a meeting of the Royal Medical and Chirurgical Society, held May 23, DR. ALEXANDER HAIG, communicated a paper on the "Relation of a Certain Form of Headache to the Excretion of Uric Acid." Previous papers by the author on the influence of diet in this headache, and its clinical relationship to gout, are referred to. An investigation of the urine was undertaken with a view of testing the relationship to gout. Meat and cheese were taken with the object of bringing on a head-

ache, for purposes of experiment. The relation of this headache to the excretion of uric acid at first appeared equivocal, but definite results were obtained on separating the urine excreted *during* the headache from that before and after. There appears to be retention of uric acid before the headache, excessive excretion during the headache, and diminished excretion after the headache. The excess during balances the diminution before and after; there is no absolute excess of uric acid; hence the previous equivocal results. During a headache there is little or no alteration of the excretion of urea. The relation of the uric acid to the urea is important, and is greatly altered during the headache. When, as the result of *plus* exercise, there is a large excretion of urea and uric acid (though in their normal relation), headache is not far off; and if anything causes the uric acid excretion to fluctuate, headache will be present during its excess and absent during its diminution. This fluctuation in the excretion of uric acid does not affect the urea, is temporary and transient, and there is proof that urates may accumulate while the kidneys are quite sound. The theory which best explains everything in this connection is that of diminished alkalescence of the blood. Does gout consist in a diminished power of forming ammonia to neutralize acids, resulting in a permanent diminution of the alkalescence of the blood? The influence of meat diet and beer in this respect, and the well-known connection of fourpenny ale with gouty deposits, are referred to. A dose of acid, either introduced from without or formed internally, may cause temporary retention of uric acid, and so lead to headache. Beer will do this. Retention possibly does not explain everything, as the excess during the headache appears to exceed the previous retention. There may be temporary excessive formation as well, hence the good effect of salicylate of soda, which diminishes the formation of uric acid. The good effect of a meal on this headache is due to the fact that it increases for a time the alkalescence of the blood. Hence also the good effects of a somewhat vegetarian diet and alkalies in its treatment. The relation here shown between the headache and the excretion of uric acid has an important bearing on the pathology of gout and other diseases connected with uric acid, in demonstrating the way in which temporary retentions of uric acid may be occasioned, and in supporting the theory of diminished alkalescence of the blood, as a cause of these retentions.

MR. G. D. POLLOCK related his personal experience of headache. The urine passed during the attack was always pale and clear. Bilious vomiting used to terminate the attack. Calomel soon afforded relief.

DR. CHEADLE congratulated Dr. Haig on his valuable paper. He doubted, however, whether irregular excretion of uric acid would explain all headaches. Women who were not large meat-eaters suffered from this headache. After railway journeys or anything causing vibrations, the headache could hardly be due to faulty excretion of uric acid. He knew a boy who journeyed from Ireland to Eton and always had a prostrating headache, the result of this journey. The scent of strong flowers—*e.g.*, hyacinth—also caused a headache. He (Dr. Cheadle) also suffered from megrim if for one hour he remained in an ill-ventilated room. A good dose of wine would sometimes cause megrim to disappear, and this seemed to militate against the views advanced.

SIR DYCE DUCKWORTH referred to the two classes of large eaters and drinkers, and those who could not eat or drink to excess without suffering soon from headache and other symptoms. This latter class had a smaller margin for the disposal of excess of food, and he supposed that Dr. Haig belonged to this class. He thought that the author deserved great credit for so painstaking an investigation.

DR. PERCY KIDD was conscious of at least two sorts of headache,—one for which no remedy is useful; the other brought on by obvious causes, and easily relieved by stimulants and other means.

DR. WARD thought there were three sorts of headache, in his own experience. Tiny little chalk-stones from the joints of the hands were obtained at the age of fourteen, when the real megrim began. The nervous headache was probably quite distinct in its causation from that which arises from inspecting a picture-gallery or from excitement. This latter kind may be relieved by a dose of strychnine. Other headaches experienced by him were amenable to sal volatile. Bottled beer is less liable to cause headache, owing to the soda added. A specific gravity of 1030 was also noticed, followed by a copious deposit of urates. Sometimes a decided exaltation of spirits preceded the severe form of headache.

DR. HINGSTON FOX inquired as to the method of estimating uric acid best adapted for clinical work.

DR. HAIG had noticed the light color of

the urine, but this seemed to have no relation to the amount of uric acid. He explained his views of the relation of diminished alkalescence of the blood as causing a retention of uric acid.—*The Lancet*, May 28, 1887.

THE PHYSIOLOGICAL ACTION OF REMISIA FERRUGINEA.

At a recent meeting of the Biological Society, MM. PINET and DUPRAT communicated a note on the physiological action of *Remisia ferruginea*. The forms employed in the experiments were an aqueous and a hydro-alcoholic extract of the root of the plant. Both extracts, as tested by litmus-paper, showed a decided acid reaction. The hydro-alcoholic extract was much less active than the aqueous extract. The experiments were made on frogs weighing thirty grammes, and the dose was the quantity contained in three divisions out of twenty in a Pravaz syringe. A quarter of an hour after the injection, in the foot of one of the hind legs, the animal was found to show general hyper-excitability, with considerable increase of respiratory movement and cardiac pulsation. In some of the animals the energy of ventricular contraction was so great as to produce asphyxia, that continued throughout the entire duration of the intoxication. The heart was found to be abnormally red. Electric contractibility of the muscles remained intact. Ligature of the iliac artery on one side, with injection of the extract into the opposite member, produced no difference in the effect. Section of the lumbar nerves on one side, with injection into the opposite member, caused the convulsions to appear only on the side where the innervation remained intact. When the spinal cord was divided below the medulla, no convulsive action took place. Ablation of the cerebral hemispheres in no way affected the phenomena above described. The authors conclude that *Remisia ferruginea* affects principally the medulla.—*The London Medical Record*, May 16, 1887.

Reviews.

ANÆMIA. By Frederick P. Henry, M.D.

Philadelphia: P. Blakiston, Son & Co., No. 1012 Walnut Street, 1887.

This is a very clear, well-written little book, containing a great deal of information upon the subject of which it treats, an epitome of

our present knowledge, invaluable to any practitioner of medicine who is not thoroughly up with the literature of the day. Simply written, the result of thorough study, we can commend the volume highly to our readers.

The author classifies anæmias as follows:

I. *Primary Anæmias*. Chlorosis, lymphatic anæmia (Hodgkin's disease), splenic anæmia, leucocythæmia, pernicious anæmia. II. *Secondary Anæmias*. Anæmia of fever, anæmia of hemorrhage, anæmia of phthisis, anæmia of heart-disease, anæmia of cancer, anæmia of syphilis, etc. III. *Toxanæmias*. Anæmia of lead-poisoning (saturnine anæmia), anæmia of arsenic-poisoning; anæmia of arseniuretted hydrogen poisoning, anæmia of phosphorus-poisoning, anæmia of nitric oxide poisoning. IV. *Parasitic Anæmias*. Anæmia caused by *Anchylostomum duodenale*, anæmia caused by *Bilharzia mæmatobia*, anæmia caused by *Filaria sanguinis*, anæmia caused by *Plasmodium malarie*.

Careful reading of the latter pages of the book, in which these various forms of anæmia are described, has confirmed us in the belief that we many years ago expressed, that the present divisions of anæmia are unsatisfactory. There can be no such thing as primary anæmia, for anæmia is not a disease, but a symptom or result. The blood does not generate itself, but is produced by various organs, and is subjected to various destructive processes. Anæmia which results either from disease of the blood-making organs or from an affection of the blood-destroying organs, is as much secondary as one which is produced by hemorrhages or phthisis. The imperfection of the popular classification is further shown by the fact that pernicious is stated by Dr. Henry to be very generally the result of the atrophy of the gastric tubules. Therefore, although classified by the author as primary anæmia, it is, according to his own showing, a secondary one. He himself feels this, and attempts to explain the inconsistency, but to our thinking his explanation amounts to nothing.

We are not in making this criticism objecting to the book, which simply is in its view of the subject reflex of the general professional thought of the day. A more original writer than its author appears to be might have attempted to treat of the diseases which produce anæmia, or, at least, would have recognized anæmia as a symptom or result of disease, and classified the forms of it accordingly.

EARTH AS A TOPICAL APPLICATION IN SURGERY. By Addinell Hewson, M.D. Second Edition. Philadelphia: The Medical Register Co., 1887.

In the preface to this the second edition of Dr. Hewson's book, he writes, "It is now issued to meet the demands constantly made for the work, and especially for it as it was originally produced; I have not seen fit to alter it in any respect." The concluding phrase of this sentence may also properly express our view, since we still hold to the same opinion that we did when the first edition appeared, and are not now inclined to alter it in any respect. We continue to think if the results claimed by Dr. Hewson were obtained by the earth treatment, the same and even better results are more likely to be gained by other and less objectionable applications.

CYCLOPÆDIA OF OBSTETRICS AND GYNÆCOLOGY. ANATOMY OF INTERNAL AND EXTERNAL GENITALS, MENSTRUATION AND FŒCUNDATION, NORMAL PREGNANCY AND LABOR. Being Vol. I. of a Practical Treatise on Obstetrics. By Dr. A. Charpentier, Adj. Prof. at Faculty of Medicine, Paris. Translated by Egbert H. Grandin, M.D., etc. In four volumes, two hundred and sixty-seven fine wood engravings, and four colored plates.

New York: Wm. Wood & Co., 1887.

The author aims "to give the practitioner, the student, and the midwife a sufficient, although condensed, knowledge of modern researches." More ambitious than a manual of obstetrics, its author feels sure, from his practical opportunities and his extensive reading, that the Cyclopædia will meet the wants of both practical and theoretical men. The first volume is occupied with, first, a section on anatomy, carefully and thoroughly written, and well illustrated; second, a section on "physiological phenomena," which goes deeply into the mysteries of reproduction, describing even the act of copulation so thoroughly that even the wayfaring man, though a fool, need not err therein, touches upon the question of the production of sex at will, leaving the subject still involved in uncertainty. Describes the process of artificial fecundation, so that any competent person may start out as an artificial fecundator, and discusses fully the topic of sterility; thirdly, a section is given on pregnancy, which, traversing well-trodden ground, will still reward the searcher by some few novel views, and much old and valuable wisdom; and, fourth, a section on labor, which differs but little from the same subject-matter in other obstetric manuals. The illustrations of this sec-

tion are only fairly good; the last, a child being resuscitated in a spirophore, while of indifferent execution, is designed with remarkable spirit.

E. W. W.

CYCLOPÆDIA OF OBSTETRICS AND GYNÆCOLOGY. THE PATHOLOGY OF PREGNANCY. Being Vol. II. of a Practical Treatise on Obstetrics. By Dr. A. Charpentier.¹ In four volumes.

New York: Wm. Wood & Co., 1887.

Vol. II. of the Encyclopædia will prove even more useful than Vol. I. Its range of topics embraces a wider field than the usual one of the obstetric manual. Its first chapter discusses the diseases affecting the pregnant woman, and gives us a mass of information carefully assorted and easy to find at short notice. The relations of cholera to pregnancy, in times of epidemic cholera, are of deep interest. At other times, of course, they are generally overlooked. The author has carefully studied the results hitherto published, and gives us the percentage of miscarriages, delivery, safe retention of the fœtus through the disease, and the infant and maternal mortality. "In the influence of labor on malaria," the author mentions the frequency with which attacks of malaria follow delivery in women not previously affected by the disease.

Scarlet fever the author believes to be almost absolutely fatal to the pregnant woman, though delivery, premature or at term, generally precedes death. In advanced pregnancy he finds measles a very dangerous disease, though more fatal to the child than to the mother. Erysipelas "seems to be less serious than variola." In typhoid fever the danger to the fœtus is occasioned by the high temperature; its peril begins at 104°. To the mother this disease affords more favorable chances than to the fœtus.

While pneumonia forms a very serious complication for both mother and child, pleurisy "does not appear to affect either the course of pregnancy or the life of the mother," except in exceptionally severe cases, and in eighteen cases collected by the author there were but two miscarriages.

In regard to phthisis and influence of pregnancy on it, the author follows and confirms the observations of Gaulard, and believes its influence to be uncertain, sometimes hastening, at times retarding, sometimes causing an apparent outbreak of the disease, and often an apparent cessation of the process. Delivery, however, tends to aggravate, and lactation certainly does aggravate the previously existing condition.

By an evident error the author is made to say that icterus in pregnancy may assume one of two forms,—“the sporadic and the epidemic, or the benign and the innocent.” The author describes what he terms the malignant or grave form. In this form he condemns as bad practice beyond question the production of abortion.

Syphilis and lead-poisoning during pregnancy receive careful attention. Especially interesting is the question of the father's influence when suffering from plumbism at the time of conception. Tobacco also causes the mother using it to frequently abort. No daring man has as yet traced untold evils to a father who is a confirmed user of the weed. Hysteria and epilepsy and the influence of traumatism are discussed, and the chapter concludes with goitre and “ulcerations” of the cervix. For the latter the editor substitutes “erosions,” and adds appropriate remarks concerning laceration of the cervix.

“The Diseases of Pregnancy” forms the subject of chapter ii. The uncontrollable vomiting of pregnancy is studied very minutely. The author has no confidence in dilatation of the external os, but the editor of the book endorses Copeman's method as often of great use, provided the internal os be left undilated. In cases of average severity, but sufficiently grave to justify the trial, the reviewer has seen it beneficial in two out of a number, and in these the relief was sudden and immediate. Between the author and the editor this chapter is somewhat confusing. The author says in regard to dilatation, “We have never obtained any results with this treatment unless it caused abortion;” while on the next page, after describing the treatment of severe vomiting, addressed to the stomach and its assumed dyspepsia, with its high claim for success, he incidentally says, “We cannot accept these conclusions because they do not explain why vomiting should suddenly cease after simple dilatation of the cervix,” a thing which he tells us before he has never found successful unless where it caused abortion, and where the relief could not surely be called sudden.

We especially commend the section on cardiac disease as influenced by pregnancy as containing much valuable thought and sound judgment.

Simple œdema, dropsies, albuminuria in its various forms, and the influence of these conditions on pregnancy, occupy considerable space, and lead up to eclampsia. Under albuminuria the author describes the “albu-

minuria of labor.” Following Dumas and others, he restricts the appellation to a condition antedating labor by two or three days at most, ending with that process, and influenced in its severity principally by the duration and severity of labor itself. This condition he believes cannot only be immediately fatal, but “can become the starting-point of a chronic nephritis.” The treatment for the albuminuria of pregnancy is “to diminish, combat, suppress this tendency to renal congestion, and bring the blood to its normal condition.” To do this venesection is the most powerful means of producing the first result; but purgatives should be first used in “a repeated and constant manner,” whatever that may be; and to meet the latter requisition, while tonics, diaphoretics, and diuretics seem indicated, the author believes them hurtful, and recommends a milk diet, giving a diet table so peculiar that we cannot avoid quoting it.

First day, a quart of milk, with two portions of food.

Second day, two quarts of milk, with one portion of food.

Third day, three quarts of milk, with half a portion of food.

Fourth day and thereafter, four quarts, or milk *ad libitum*, and no food or *drink beside*.

The author, while believing this right in principle, prefers, as we certainly should, to give absolute milk diet at once.

Only in exceptional cases would the author recommend the induction of premature labor. He objects to it mainly because he considers that the strain and effort of labor itself is sufficient to often set up albuminuria, and must, therefore, tend to intensify it if previously existing. In this view, however, he is by no means supported by the most recent writers.

In studying the subject of eclampsia the author leans toward the view of Cohen, of Hamburg, as published in 1875, and considers the condition as divisible into two varieties,—uterine and cerebral, demanding different lines of treatment and differing greatly in gravity.

The author's description of an attack of eclampsia deserves to be read by all. The whole section is evidently the result of great research, study, and personal experience. The editor, in opposition to the author, advises the induction of premature labor as a means of prevention when attacks seem imminent before term.

“The curative treatment of eclampsia” and “convulsions not due to eclampsia” will give

the reader many useful hints in regard to the treatment of these conditions. The early evacuation of the bladder is insisted on, since Lamotte cites two cases in which over-distention of that organ appeared to be the exciting cause. Mechanical and manual restraint is condemned. Even auscultation and abdominal palpation should be avoided, if possible, and still more the vaginal touch, which should never be unnecessarily employed. Of course examinations have to be made from time to time, since the progress of labor is often preternaturally rapid. The methods of treatment are classed by the author as the antiphlogistic and anæsthetic. The former embraces general blood-letting, which the author believes should be moderate and rarely repeated, and which his statistics prove to at least have the power of increasing the interval between the attacks; purgatives, which the author employs, especially calomel and jalap; emetics, which he, with revulsives, has entirely discarded.

Pilocarpine subcutaneously the author considers is as yet a doubtful remedy, since it has not been tested alone to any extent. The editor alludes to the hypodermic use of morphine, but neither editor nor author mention the employment of venesection followed by morphine hypodermically. The anæsthetic method seems about as uncertain in its result as the antiphlogistic method. Still, the author considers it as offering the best hope. Ether he rejects. The difficulty with chloroform he believes to lie in knowing when to give it up. "When the patient has gone several hours without an attack, it is best to withdraw the chloroform a little without giving it up altogether." He says, p. 139, "We think that chloroform acts only on condition that its action is prolonged, and therefore it must be given continuously." Chloral hydrate: the statistics of this drug in eclampsia, as here given, are certainly remarkably favorable. The statistics of Tesbut place the mortality from venesection at thirty five per cent.; chloroform, 17.8 per cent.; chloral alone, four per cent. The chloral, owing to the frequency of emesis, should be given by the rectum. The dose of the author is first 60 grains. If this is not wholly or partly retained, a second similar dose is given at once, and a third if the second is lost. Then, for five or six hours, whether attacks come or cease, nothing more is done, and then another 60-grain dose. This 180 grains is generally the limit, but 240 grains have been given in twenty-four hours. Even when they do not recur after the first dose,

60 grains are again given after twenty-four hours. Wherever labor can be terminated by version or forceps, without injury to mother, it should be done. But with a tight and rigid cervix what are we to do? Leave it alone is the author's advice. The section on convulsions not due to eclampsia deals with neuralgias, nervous troubles from mechanical causes, of central origin, reflex, vertigo, syncope, paralysis, hemiplegia, cerebral congestion, cardiac affections, paraplegia, traumatic paralysis and special paralyses, intellectual disturbances, and is followed by a section on mania and allied disorders.

In treating of pruritus vulvæ the author gives a number of formulæ, but fails to recommend the salicylates, which should always be given a trial. The editor adds a few lines in regard to the benefit often derived from applications to the often eroded os.

Two excellent chapters—on "Diseases of the Womb" and "Diseases of the Fœtus"—are followed by one on "Miscarriage." This, while quite full and abounding in research, exhibits the author's own view in regard to the treatment of this condition, a view in which we think few will coincide. He advocates a perfect let-alone policy in retention of the placenta and membranes. The editor comments in language none too severe upon the dangerous advice given by the author, whose own strictures upon active interference, and especially the use of the curette, are of no gentle character.

But while one may differ at times from the author's conclusions, he at least possesses the merit of giving the reader the premises from which he deduces them, and the reader, with the evidence before him, may come to conclusions diametrically opposite if he will.

E. W. W.

OXYGEN IN THERAPEUTICS: A TREATISE EXPLAINING THE APPARATUS, THE MATERIAL, AND THE PROCESSES USED IN THE PREPARATION OF OXYGEN AND OTHER GASES WITH WHICH IT MAY BE COMBINED, ALSO ITS ADMINISTRATION AND EFFECTS. Illustrated by clinical experience of the author and others. By C. E. Clevinger, M.D.

Chicago: W. A. Chatterton & Co., 1887.

The author has evidently thought much on this subject, and been much vexed at heart, no doubt, at the apparent success of the empiric, who has flourished under his eye like the "green bay-tree." He has watched, perhaps, the "compound oxygen parlor" from its modest beginning in some by-street and humble house to its full development in a truly

palatial edifice, adorned with works of art, flashing by night with electric lights, gilding, and cut glass, and his heart has been seared with envy. The envy of the righteous was the success of the wicked, a feeling as old as the time of David, as old as man, historic or prehistoric. But the author's broodings have led him to investigation. What is it? Does it really succeed? and how? Can any one use it? The affirmative answer to the last question is, if it can be given, the panacea for the envious. They can do it, if they wish. But, then, they do not care to do it. Let the other fellows reap what success they may.

The author is familiar with chemical manipulation, and gives us minute and excellent directions for preparing the gases. Few in active practice could take the time and trouble. The dentist, however, has solved this part of the problem to his own satisfaction and profit.

The author gives us a list of the diseases in which inhalations of oxygen and compound oxygen—oxygen and nitrous oxide gas—are useful. The list is very long. It includes hydrophobia and fatty placenta, septicæmia and ulcers; in short, almost everything; and, after reading it, we are disposed to think more kindly of the advertisements of the present purveyors of this remarkable remedial agent.

E. W. W.

Correspondence.

LONDON.

(From our Special Correspondent.)

It seems but the other day that I wrote to you at the beginning of the winter session, and here we are about to commence the summer's work at the medical schools. This is the season appointed in London for the study of pharmacology and therapeutics, the English schools, as a rule, differing in this respect from the Scotch universities, where *materia medica* constitutes a long winter course. If I attempt to give you some account of the teaching of your special subject in London, I fear you will not be altogether convinced of the success that is likely to attend the system. No doubt matters have mended very much in the teaching of *materia medica* during recent years, but still the entire provisions for this course must be regarded as being unworthy of its importance. The more one inquires into this matter, indeed, the more one feels dissatisfied, and the more one sympathizes with our lecturers on *materia medica*, who, as

a class, are known to labor under great difficulties in their efforts to assert a better position for their chairs. In my letters to you I have avoided, as far as possible, committing myself to the present chaos of what with us goes by the name of "medical politics," or that part of medical politics which relates to the State provisions for the proper education, examination, and registration of medical men. I have felt that such a state of affairs as that from which we are now suffering here is never likely to arise with you, and that you may well be spared the infliction of the story of our struggles for reform. But when I come, as I do now, to speak of the teaching of pharmacology in England, I find it necessary to depart somewhat from my rule and to refer to recent changes in the regulations of our examining bodies.

Know, then, that within the last three years an honest and determined effort has been made by our two great royal colleges in London, the College of Physicians and the College of Surgeons, to give in union a single, a thorough, and a complete examination in all medical and surgical subjects, instead of the fragmentary, unsatisfactory tests that were previously in force. New examinations entailed new regulations as to the course of study. Now, however unhappy the confession may be, it is a fact that systematic instruction in medicine at our schools must always be conformed to the demands of examinations. Students must be taught what they are required to know at the examination table, whatever their professors may think. It is hopeless for a teacher with a turn for originality to strike out a new line in his lectures, whether on *materia medica* or on anything else. His students would certainly be rejected, and he would soon find himself compelled to return to the beaten track of the college schedules. Reform, therefore, must begin with the examining authorities. The lecturers have to use their influence with the examining boards to secure proper regulations and then teach up to them. But here comes the rub. What does the influence of modern pharmacology with us amount to? How were our lecturers on pharmacology to obtain anything like a reasonable recognition of the importance of their subject from the venerable heads of the venerable colleges? What could be expected in this direction of public men who were mainly educated in the days when instruction in pharmacology began with a mass of botanical, geographical, and chemical details, and ended with a col-

lection of empirical cut-and-dry applications of drugs known as their "therapeutics"? The difficulty would appear to have been to bring the heads of our examining bodies to understand that there is such a subject as pharmacology, relating to the action of drugs on the healthy body, quite apart and distinct from medicinal therapeutics, the treatment of disease with remedies.

However, difficult matter as it must have been, the colleges have been induced to take one step in reform which is of the first importance. Although they still cling to the phrase "medicinal action" in their requirements of students of the first year, they have separated *materia medica* from therapeutics in the examinations, the second subject not being required of the candidate until his final appearance before the board, when it is taken with medicine, surgery, and midwifery. For this great improvement the colleges deserve all credit.

Now let us inquire how our lecturers have taken advantage of these new and better regulations. I regret to say they do not appear to me to have availed themselves of the reform for which they agitated. The plan on which many or even most of them seem to deal with their subjects appears to me to be far from satisfactory. Whilst they agitated, as I have said, for a distinction between pharmacology and therapeutics in the examinations, I question how many of them, to judge by the accounts that reach me, have divorced the ill-matched pair of subjects at the schools. I fear that a course of *materia medica* and therapeutics in the average London school of medicine still consists of an hour's systematic lecture four or five times a week, an occasional demonstration by the lecturer or his assistant of the physical characters of the principal drugs, and a general superintendence of a class in pharmacy in the hospital dispensary, of which the student may or may not avail himself. To begin with, the time devoted to the whole course—some forty hours, from first to last, in the way of lectures—is ridiculously short. But the improvement that appears to me to be most urgently demanded is what I have just called the divorce of *materia medica* from therapeutics. The time has surely come for us to cut these subjects clean apart and give them to different lecturers. It is not only that professors like Dr. Lauder Brunton and Dr. Frederick Roberts might well be released from the drudgery of *materia medica*, but that the knowledge of men of their learning and experience ought

to be turned to very different account in the direction of a thoroughly practical course of therapeutics. But I must not be unjust. I understand that at some of the smaller hospitals a beginning has actually been made of the kind I have indicated, and that their senior students will now have an opportunity of listening to lectures on general therapeutics concomitantly with their work in the wards. It is certainly but a question of time, the establishment of instruction of this kind in all our schools of medicine.

Before I part with this subject let me tell you that the hope has been realized which I expressed to you in my letter of December, of the establishment of the Croonian lectureship on a basis favorable to therapeutics. The College of Physicians has now made the final arrangements for the future disposal of the trust money. This will amount to the handsome sum of over two hundred pounds a year, one hundred guineas of which will be paid to the lecturer, whilst the balance will be devoted to defray the necessary expenses.

I will pass on now to a question of treatment of a very different kind. No doubt American practitioners are aware that our government appointed a committee, a good many months ago, to inquire into the value of Pasteur's method of inoculation against hydrophobia. There was something like a hydrophobia scare in England most of last year, which had its origin not so much in the actual increase of the disease as in the severe restrictions with regard to muzzling dogs which were enforced by the London police, and which roused popular feeling to a wonderful pitch, fortunately in vain. The government committee is a very strong one, including as it does Sir James Paget, Sir Joseph Lister, Sir Henry Roscoe, Dr. Quain, Dr. Burdon-Sanderson, Dr. Brunton, Mr. Fleming, and Mr. Victor Horsley acting as secretary. The task of the committee is undoubtedly difficult,—to pronounce an opinion on the Pasteur system which shall be a practical guide to the authorities in this country. We need not be surprised, therefore, that so far no report has been issued. The committee might at once have hastened to express an opinion on the subject, but such an opinion could manifestly have been of a preliminary character only, and most probably would have been erroneous and misleading. Not only must the results of this as of every other method of treatment be weighed with the greatest care and caution, but in this particular instance so-called results could be of no

possible value until a period of many months had elapsed after the application of the remedy,—until, in a certain number of test cases, at least the average period of incubation of hydrophobia had been passed. However, I hear on good authority that we may expect a report shortly. The committee has not been idle. Mr. Horsley has studied the method as well as the records in M. Pasteur's laboratory. He has been provided with a list of various series of cases of bite that have been treated in Paris. On the results of their inquiry into these series the report of the committee may be expected to be distinctly favorable, as well as on the results obtained by evidence of other kinds. I understand that the committee have arrived at the conclusion that the percentage of deaths from hydrophobia after bites of rabid dogs is decidedly lower in inoculated persons; that the system has been proved to be protective. With respect to possible danger from inoculation, I must refer to a fatal case of Landry's paralysis, or acute ascending spinal paralysis, which occurred here in one of Pasteur's patients, and caused considerable discussion at the time. The patient in question, who was an attendant at the Brown Institution for the Study of the Diseases of Animals in London, had been bitten by a rabid cat, in which Mr. Horsley, the professor superintendent, was studying rabies. The man had been at once sent to M. Pasteur, and treated with *intensive* injections, but he died with perplexing spinal symptoms immediately on his return from Paris. Whatever may have been the exact nature of his illness, there was a general impression among the profession here that the patient died from the effects of the inoculation, as a few other cases appear unfortunately to have done. However, risk will probably disappear under the milder injections now used.

It is most sincerely to be hoped that the favorable report which I expect from the committee may bear the test of time. Were it only for Pasteur's sake, one would rejoice to see the value of his method accepted. From first to last he has been a pattern of generous, open, kindly dealing with regard to it, receiving strangers from every country with the greatest possible attention and consideration, laboriously treating half a hundred patients every morning, and entirely declining to accept any remuneration or other return than thanks for his trouble, even from those who were in the best possible position to pay for his services.

PARIS.

(From our Special Correspondent.)

The Paris Faculty has of late been paying a heavy tribute to death. Barely more than three months since Professor Bécларd was carried off by acute pneumonia. Next Professor Gosselin, the celebrated surgeon and scientific successor of Velpeau, succumbed on April 30, a victim to a cardiac affection of long standing. And now we have to record the death of another professor of equal renown, but younger than either of them. A. Vulpian, a native of Paris, like his two brother professors, died on May 18, after a short illness from infectious pneumonia contracted at the dissecting-table. He was born in 1826, graduated in 1854, and became a Fellow (*agrégé*) of the Faculty in 1860, with a remarkable thesis upon Secondary Pneumonias. After being a physician of the Salpêtrière and Pitié Hospitals, his researches on the nervous system caused him to be chosen, in 1867, for the chair of pathological anatomy at the Paris Faculty of Medicine. A bitter campaign was made against him by antagonists, who accused him of atheism and materialism. At the time—under the empire—such doctrines were not favored; but now, under the third republic, they rather lead to preferment. It is hardly necessary to add that the charge was neither proven nor even answered, and Vulpian was the medical attendant of the Comte de Chambord (Henry V.) during the last illness of the champion of the right divine and papal supremacy. Dr. Vulpian became a member of the Academy of Medicine in 1868, of the Academy of Sciences in 1879, the President of the Faculty in 1875, and the Perpetual Secretary of the Academy of Sciences in 1885. His labors as an investigator were chiefly directed towards the anatomy and physiology of the nervous system. Among his published works are his "Lessons on the General and Comparative Physiology of the Nervous System," "Lessons on the Vaso motor Apparatus," and "Affections of the Nervous System." Professor Vulpian was justly esteemed for rigorous method and exactness of observation as an investigator and keenness of diagnosis as a physician. He was a most ardent supporter of Pasteur's theories, and the one who decided him to attempt for the first time on man inoculations with attenuated rabic virus.

But though professors and scientists may die, the field of science in Paris hardly looks likely to run to waste owing to the lack of workers, as may be seen from the gleanings

below. To begin with therapeutics, methylal will be the first noticed.

Methylal as a Hypnotic.—Methylal is a substance comparatively long known to chemists as one of the products of the oxidation of methylic alcohol. It is an ethereal liquid boiling at 42° F., smelling like acetic ether, and soluble in three times its weight of water. Messrs. Mairét & Combemale have been studying its physiological and therapeutical actions, and now offer it as a new addition to the list of hypnotics, after presenting its credentials in several communications to the Academy of Sciences. Experiments were first made on animals to investigate the physiological properties of the chemical, its doses, best way of exhibiting, etc. It was found that no matter how administered, hypodermically, by the lungs or the stomach, methylal acts as a true hypnotic, and the more so that the animal operated upon is nearer to man. A monkey, for instance, is set to quiet sleep with half the dose necessary for a dog or a cat, while guinea-pigs pass from a somnolent to a half-comatose state, according to the dose, without ever enjoying real sleep. The proper method of administering the chemical is through the stomach. Hypodermic injections are quite painful and apt to produce ulcerations; inhalation or pulverization are irritating to the lungs and nasal membranes. On the contrary, the ready solubility and far from unpleasant taste of methylal render it easy to administer in any ordinary potion or mixture, although the effects are not so rapid as with the two other modes, especially the hypodermic, but they are more persistent.

On man methylal acts as a hypnotic, and seems to be more particularly adapted to certain forms of dementia. It was tried with thirty-six insane patients suffering from nervous agitation and insomnia. In all cases it was given immediately before retiring, at one dose, in an ordinary potion (*julep simple*). The patients never showed any repugnance to the medicine, nor was any organic trouble caused by its use continued for some time. The following are the particulars of its effects in the different forms of insanity. In incipient madness (*folie*) methylal has no hypnotic action, even when the dose is increased to 7 and 8 grammes ($1\frac{3}{4}$ to 2 drachms), but during the periods of acute agitation it generally succeeds at first in procuring sleep in doses of 5 or 6 grammes. The effect, however, wears off in from three to five weeks, even when the dose is increased. The same is true with patients suffering from simple dementia. In

alcoholic mania methylal is unsatisfactory, and is not recommended. In dementia from atheromasis small doses of 3, 4, and 5 grammes procure sound and continuous sleep for the first five or six nights, but after this period, even with increasing doses, the sleep, as in simple madness, becomes less thorough, and lasts only some five or six hours. It is in paralytic dementia, at its different stages, that methylal gives, as a rule, the best results, in doses varying from 5 to 8 grammes. It is also in this form of insanity that the medicament keeps its power for the longest period without an increase of quantity. The *julep* or *potion simple* of the French Codex, alluded to by Drs. Mairét and Combemale, is made as follows :

Simple syrup, 30 grms. (1 ounce);
Orange-flower water, 20 grms. (5 drachms);
Distilled water, 100 grms. (3½ ounces). M.

The methylal is administered simply dissolved in the mixture, but it must be borne in mind that in all cases the quantities indicated must be understood by weight, and not by measure. With a liquid of sp. gr. 0.8551 like methylal, a fluidounce is quite different from a troy ounce.

To conclude with methylal, it appears to possess exclusively hypnotic properties. Its effects on the brain are transient and leave no depression. Even after being administered for fifteen consecutive days, no troubles of nutrition, of the general functions, or of the nervous system were observed. For these reasons, notwithstanding its relatively weak power, methylal is recommended as a safe and reliable hypnotic in some forms of insanity.

Elimination of Formiates.—The chemical similarity of formic and acetic acids might lead physiologists, *a priori*, to think that formiates are most likely decomposed in the economy in the same manner as acetates are, and in the same way are eliminated as carbonates. But experiments carefully made by Drs. Gréhan and Quinquaud prove that the combinations of formic acid show in the economy a resistance to decomposition quite unexpected to chemists. The most difficult part of the investigation was the estimation of formic acid. In the absence of a better method, Drs. Gréhan and Quinquaud were obliged to employ the distillation process, *in vacuo*, in the presence of an excess of sulphuric acid. Analytical chemists, who like nothing so well as a readily-collected precipitate, know the tediousness and difficulties of

distillation processes. But it seems there is no choice in the matter. Experiments made upon dogs, frogs, and pups show that when ingested into the stomach, or injected into the blood, *formiate of sodium* passes off mostly through the urine, without the slightest decomposition. No excess of carbonates is found in the urine during the administration.

Ether-drinking is almost unknown in Paris, the natives having as a rule no propensity for intoxication of any sort, although the trade in wines and liquors is as free as that in tea or ready-made clothes. Whether such freedom is the cause or the result of moderation in drink is a question that may be left to moralists to decide. However it may be, a case of *ether-poisoning* reported by Dr. E. Ory has attracted notice, owing to some of its features. The patient, Mr. X., is a Japanese, age 35, of small stature, spare, and very nervous. Being a dyspeptic he began, to ease his pains, to inhale ether; then to take from time to time ten drops or so in water,—so runs his story,—and finally one day, for some reason or other, he swallowed at a dose a quantity of ether not exactly ascertained, but in no case less than fifteen grammes (half an ounce by weight). After this draught, mixed by himself with sugar and water in a café, he took a cab and drove home. Judging from the distance, at least half an hour must have elapsed before he could have reached his rooms. There his wife only noticed he was somewhat strange, acting like a man slightly inebriated; when, after sitting a short time, he suddenly ceased to speak, and fell into a comatose state. From red his face turned pale, he vomited some aliments, and fell into a syncope. The ether had been swallowed at 4.30, the syncope occurred at 5.30, and it was 6.30 before Dr. Ory could reach the patient's bedside. The diagnosis at first was somewhat perplexing, when, on attempting to induce artificial respiration, the smell of ether, hitherto covered by that of the ammonia, vinegar, etc., used by the attendants, became distinctly recognizable in the mouth, and gave a clue to the cause of the swooning. There was no longer any hesitation as to the treatment,—the usual one in such cases. Rough frictions were ordered, the windows opened, and artificial respiration was resorted to. An enema with 8 grammes (2 drachms) of acetate of ammonium was prescribed to ward off a relapse of the prostration. Not to enter into all the details of the treatment, suffice it to say that after a short amelioration the physician was called in again, and had to

resort again to artificial respiration. The total duration of the anæsthetic sleep was twelve hours, and of the phenomena depending upon the action on the medulla,—abolition of the respiratory and heart movements,—four hours. During several days the urine was more or less abnormally colored, intensely dark brown at first, and gradually toning down to the natural hue within about four days. The icteric coloration of the skin and sclerotic, manifest at first, slowly passed off also in some ten or twelve days, when the patient resumed the orthodox Japanese color. A persisting congestion of the lungs was also observed. The patient kept his bed for fifteen days, and, owing to extreme and obstinate anæmia, had to remain in-doors for three months and a half before going out for the first time. Dr. Ory, agreeing with Dr. Morewood, of Draper's Town, thinks it was artificial respiration that saved the life of his Japanese patient.

Physiological Effects of Earthquakes.—At a recent meeting of the "Société de Médecine Pratique," an association composed of both physicians and pharmacists practising in Paris, Dr. Duchaussoy related his medical experience with the peculiar effects of the late earthquakes at Nice, Cannes, and Mentone. Among the immediate consequences he noted three cases of metrorrhagia, one of which occurred in a woman who had ceased to menstruate four years before. Sea-sickness he found quite common. Several women became suddenly insane; but one who had been ailing six months from paralysis was cured immediately. Patients with heart-diseases suffered most, many experiencing violent fits of palpitation, while several sudden deaths were recorded. A few ladies who bravely stood the morning shocks had a violent fit of fever in the evening.

The consequent or secondary effects were no less striking. A vague feeling of dread was common; many persons could not go into their bedrooms in the evening and lie down for the night. Some had for days a periodical recurrence of the trouble experienced during the earthquake, a recurrence accompanied with copious perspiration, loss of hair, failing appetite, and extreme weakness. One, especially, a lady, more than thirty-five days after the accident, was still so affected that she could not see a piece of furniture oscillating without great involuntary terror. Dr. Brochin's opinion was that the case of paralysis, quoted by Dr. Duchaussoy, was probably of hysteric origin, as he (Dr.

Brochin) had occasion to observe an effect just contrary in an hysteric young woman who had experienced no fits for several months, and in consequence of the earthquake was taken afresh with numerous fits following one another. Dr. Ley finally related a case of sudden death from heart-disease. The patient, a lady, would certainly have lived longer had not the emotion caused by the earth trembling brought her case to an abrupt termination.

Tuberculosis from Whey and Cheese.—That the milk of cows affected with phthisis may propagate the disease among the consumers is a fact now generally admitted. But M. V. Galtier goes a step further, claiming that even the whey and cheese made from such milk are liable to communicate tuberculosis. In a memoir presented through Dr. A. Chauveau to the Academy of Sciences, he has marshalled quite a convincing array of experiments upon rabbits and guinea-pigs to prove the dangerous nature of such aliments. Not that he followed the long and tedious process of feeding the animals with the products. He simply inoculated them with small quantities made from milk known to be contaminated, and thus caused unmistakable tuberculosis, even with cheese that had been made for over two months. From his experiments he has come to the conclusion that germs of tuberculosis are to be found not only in the fresh milk of cows affected with phthisis, but also in the dairy products derived therefrom; the germs remain both in the curd and the whey; so that man can most likely contract tuberculosis from the fresh milk as well as the curd, the whey, and the cheese even salted, which proceed from a consumptive animal. Poultry and swine fed with buttermilk of like origin are also liable to become phthisic, and to such cause the disease in farm-yard animals may in many cases be with reason attributed. Finally, the milk produced by cows suspected of tuberculosis should in no shape be used for human consumption, but only for feeding animals, and even then after thorough ebullition.

PARIS, May 21, 1887.

BERLIN.

(From our Special Correspondent.)

During the week immediately following the Easter holidays there occurred two of the most remarkable Congresses for German medicine,—the Congress of the German Surgical Society in Berlin and the Congress of

the Society for Internal Medicine in Wiesbaden.

If I were to attempt to describe the amount of material which appeared and was discussed at these Congresses, the choice would be most difficult, as it would be impossible to confine all that is instructive and interesting within the narrow limits of a letter, and I cannot think your readers would be satisfied with only a description of the themes under discussion. I therefore prefer to make a selection of those which seem to me most suitable for your journal, giving them a thorough report and only touching lightly upon the others.

The German Surgical Congress has had fifteen meetings before this one, and a large part of the history of surgery owes its existence to the transactions of these meetings. We see the great change brought about in surgical practice by the theories of Lister, and the German Surgical Congress has not only had the greatest influence in the development of these theories, but the rapid adoption of them is less Listerism than the skilful absorption of them by such men as Volkmann, Bardeleben, Thiersch, Esmarch, and others.

The Surgical Congresses of seventy years bear testimony that the Lister system, as well as operative surgery, owes to them its greatest development. Nearly every German Surgical Congress has produced some remarkable progress, the entire completion of which we have not yet reached, but this tradition has not been sustained by the impression made upon us by the meeting this year; there seemed to be something lacking. It is true there were many cases discussed, but there failed to be anything decisive upon any question. The only subject which led to a discussion of great value was the treatment of peritonitis by laparotomy, but which had no satisfactory conclusion; that, however, was in the nature of the case. We will not leave this subject, however, without mentioning the vindication of iodoform as an antiseptic, in spite of the attacks made recently upon this valuable remedy by the Danes Heyn and Rovsing. Not only were good practical results testified to, but theoretical experience refuted the objections made by the above-mentioned authors. We may, therefore, rejoice that this medical treasure remains as a valuable remedy, of which, unfortunately, there are only too few.

If we confine ourselves to a short account of the proceedings of the Surgical Congress, on the other hand we must be more diffuse in our account of the Congress for Internal Med-

icine. This Congress was established in 1881 through the influence of Leyden, and received from the beginning an organization which guaranteed its importance for the future. The principal object of the meetings is the general discussion of important questions upon internal medicine, as far as they are known, that an opinion may profitably be obtained. These discussions are most carefully prepared. Two authorities introduce a given subject, and as it has become the custom to hear the opinion of every competent authority upon the matter under discussion, a really exhaustive decision is obtained, as not only the most celebrated physicians of Germany, but also of other countries, regularly attend the Congress. We can, therefore, assert that this Congress is the heart of the scientific research in Germany.

There were three subjects under discussion at the Congress this year. One, the localization of diseases of the brain, we shall not describe, as it does not come within the scope of your journal. The second subject, the pathology and therapeutics of whooping-cough, was decided by all to have made no advance that was at all remarkable during the last twenty years. The third subject was the therapeutic treatment of phthisis, and on this subject we will speak more particularly.

When the Congress met for the first time five years ago, it was most natural, from the effect of the discovery made not long before of the tubercle-bacillus by Robert Koch, that there should have been a discussion upon the results his discovery would have upon the treatment of diseases of the lungs. The great importance of Koch's researches upon the etiology and diagnosis of tuberculosis was unanimously recognized then. Since that time there have been a series of attempts to derive some benefit from them for the therapeutics of consumption. Only too soon one had to realize the fact that to attack the tubercle-bacillus with substances fatal to the bacillus in the human body was impossible, because all these substances destroy the living cell in which the bacillus has its place. This fact, therefore, was unanimously established this year by the Congress,—*there is no specific remedy for pulmonary consumption*. All medical treatment can only be against certain symptoms of this complicated disease. For the actual cause of the organized disease there is no cure.

Apart from the negative result arrived at, the general knowledge of this fact would save many diseased from much suffering from the

application of all kinds of useless medicines could it be proved that the discovery of the tubercle-bacillus had been without benefit therapeutically. This, however, is not the case. On the contrary, it has made it possible to institute in another direction careful investigations for a rational treatment of consumption, and especially for prophylactic treatment of phthisis.

If we take the position of endeavoring to prevent the spread of phthisis from the standpoint of the tubercle-bacillus, in its relations as a living organism, as the cause of this disease, the solution of the problem may be attained in two ways: we may endeavor to destroy or render inert the noxious agent itself, or we can give all our energies to preventing its entrance into the human organism.

The first undertaking comes within the province of hygienic science in its widest sense; the disinfection and care of buildings, lodgings, food-stuffs, clothing, all afford a field, the limit of whose relationships it is hard to define; but as prophylactic and disinfective measures have given such good results in other fields, we should never lose sight of the possibility of like success in the prevention of this greatest scourge of humanity:

In the hygiene and prophylaxis of the individual we have efficient means to prevent the direct transference of tuberculous poison. The prohibition of intimate association with the phthisical in the act of kissing; the disinfection of the sputa; the careful cleansing of soiled clothing; the careful segregation of such patients,—all these precautions are ordered, unfortunately, by but an occasional physician. And at present a successful protection against phthisis may be said to have been more commonly accidental than the result of intelligent effort. The transmission of tuberculous poison by the media of tuberculous meat and milk has been clearly demonstrated; and hence the necessity of careful supervision of slaughter-houses and a thorough examination of meat.

We come now to the second question, How can we prevent the entrance into the human body of the cause of phthisis? Now, those must be considered who inherit the tendency to phthisis, and sooner or later will be liable to have it. It is just these who are to be protected, even before their entrance into the world, from the slightest chance of infection, by preventing their being nursed by phthisical mothers or wet-nurses, sleeping with phthisical persons; the care of such children by phthisical attendants and servants is to be

strictly avoided. Through careful nourishment the resistance of the body is increased, and the choice of an occupation which will allow being much of the time in the open air is of the greatest importance. Among all these prophylactic measures there are many which can be carried out with a fair hope of success, and we need not sink helpless before the enemy. But when, in spite of every effort and care, the disease has penetrated into the organism, in spite of the above assertion that there is no medicine known which will cure phthisis, we must not feel hopeless for those who are already invaded by the poison. To the question, Can phthisis be cured? there was no contradiction. It cannot be denied that the sacrifices are great with which the cure must be bought. For the very reason that recovery is possible, the physician must inform his patient of the seriousness of his condition. The first thing necessary is the hearty co-operation of the patient; then the slightest deviation from the mode of life prescribed lessens the probabilities of permanent cure. To attain this the *hygienic dietetic* method was recognized by all. The details of this method must be determined by the physician and the circumstances of the patient. Fresh air, protection against taking cold by rational clothing and care of the skin, a regular diet. In the latter great caution against overstepping the prescribed rules. The doctrine that some places are, geographically and geologically, better adapted to consumptives than others, was not received without contradiction from the opposite side. A strict treatment in an institution was almost unanimously recommended for those liable not to persevere in a strict course of cure. Those patients, however, who are able to seek a favorable climate, or who can afford care in an institution, belong to a very small class, and the number of those persons of small means and the very poor is very large, therefore there is a great necessity for more consumptive hospitals. The care in an institution, which might be situated either near a forest or in the middle of a large garden, would combine many of the requisites to a cure. Surely a great blessing would attend the sacrifice of carrying out this thought.

The short *résumé* which we have endeavored to give could not, of course, touch upon many subjects which were mentioned by Drs. Dettweiler and Penzoldt, who so ably conducted the discussion. We have only tried to lay before you the great features of the position taken by German medical science at

the present time upon so important a matter. If phthisis will be cured in some other way by therapeutics is still a question of the future. It is not yet decided that phthisis cannot be fought by some other more direct treatment, but so much has been undoubtedly been decided by this year's Congress for Internal Medicine: there is no reason for our folding our hands in idleness. With a clear knowledge of the cause of the disease, which we owe to the discovery of Koch, a new impetus has been received by the physicians. What is now within our power has been clearly demonstrated by the discussions of the Congress, and great responsibilities are laid upon us, the accomplishment of which lies with many self-sacrificing workers.

Death has been at work in Berlin among the German medical philosophers with great force this year. In the last few weeks two well-known and learned men have died whose names are not unknown in America. One is Wilhelm Hack, whose theory of the erectile tissue upon the turbinated bones created so much interest some years ago. He died from heart-failure, while riding a velocipede, on the 23d of April. The second is the pathologist, Carl Friedländer, a name connected with many valuable researches, but chiefly with a discovery bearing his name, the pneumococcus. He died at Meran, on the 13th of May, of phthisis.

SANTONIN-POISONING.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—On pages 209-11 of the March number of the GAZETTE is to be found a correspondence from Paris, in which are mentioned some points on "santonin-poisoning" of great benefit to the physician. I have seen nothing on this subject for years, and have often wondered if physicians ever were troubled as I have been with this much-lauded drug, santonin.

If American physicians happen to poison their patients with this drug, they either do not care to publish it, or do not take interest enough in the matter to do so. I have used santonin for seven years in quite a number of cases, and have had some ill luck with it.

The first case of poisoning with it was with one of my own children, a little girl of 6 years. She presented every symptom of worms, and I thought that I would give her santonin. I gave 2-grain doses, morning and night, for two days and nights, taking care to keep the bowels moving every day. On the morning

of the third day I was sent for in haste by my wife, as the child was having convulsions. There had been three convulsions before my arrival, and only one after. My wife had given a large dose of castor oil as soon as the child could swallow it. The bowels moved freely in two or three hours, and the symptoms of convulsions were all over. Sixty odd large worms were expelled within twenty-four hours.

I thought for a day or two that it was only the worms that produced the convulsions, but I noticed the conjunctivæ were of a yellowish-green color, and the child could not see well. After a few days the eyesight got all right.

The second cases were in the year following, 1881. Two children in one family were treated for worms by the mother, under some directions from their family physician. On the third morning I was called to see the children, "with fits," as they called them. Stimulants internally, heat to the extremities, a copious enema, and such measures as were calculated to keep up the circulation, were used.

The kidneys were secreting but little urine. The pupils were dilated.

After some hours' work the bowels moved and kidneys acted well, and the children got up, but no worms were passed.

The drug had been given in these cases in conjunction with calomel and sugar. I do not know in what amounts.

The next case was a little boy, 7 or 8 years old. He was taken ill during my absence, and another physician was called to see him, and he gave calomel and santonin. Three doses, 3 grains of the latter to 4 or 5 of the former.

The bowels never moved for forty-eight hours, and as soon as I arrived home I was called to see the little fellow. His limbs were flexed, bathed in cold sweat, pulse 150 to 160, respirations jerking, pupils dilated, jaws set, abdomen swollen, and comatose nearly all the time. I could do but little. Stimulants rubbed on the spine, plenty of warm water and soap enemas, poultices to the abdomen, blister to the nape of the neck, etc. After a while the bowels moved copiously; green offensive matter.

At the end of five hours he could talk, move, and swallow water. The urine was very scanty and high-colored. By the use of diuretics his kidneys assumed their normal functions.

I was indeed very much puzzled over this case until I found that the child was very nearly blind for over a week. Everything was yellow

to him for some ten days. Having seen in the "National Dispensary" that blindness had been produced by santonin, I could better account for the great disturbance.

I have seen many other cases that were similar to the above, but not so severe.

I find it will not do to give santonin to children while they have high fevers, or when the bowels are costive. If given with castor oil and sugar mixed together it does much better.

I have little doubt but that through the indiscriminate use of the drug by parents and physicians many children are killed by its effects.

I would be pleased to see the reports of other physicians on this drug. If we have bad results, let us report them as well or more so than our good success, for by so doing we will benefit mankind.

Very truly yours,

CHEVES BEVILL, M.D.

WINFIELD, ARK.

CUTANEOUS DISORDERS FROM INDIGESTION.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—In your reply to my query in the March number of the GAZETTE, page 212, you call the disease to which I referred *urticaria*, and so headed my article for me. I think likely I did not make myself well understood, as you missed the mark in the heading, and also failed to answer the particular point about which I was wanting information. I quote my language: "Now, what I want to know is, why this disturbance of the stomach is telegraphed by the nervous system to this distant locality and nowhere else?" I fully endorse your remarks on *urticaria*, as also those of Dr. H. D. Thomason in the April number of the THERAPEUTIC GAZETTE. The subject of my query has none of the characteristics of *urticaria*; none of that heat with burning and stinging sensation, giving it that significant name, nettle-rash; none of those nodulated or elevated wheals or patches; nothing visible to the naked eye, however much rubbed or scratched, and it is confined to the legs; sometimes in spots, and sometimes extending over the whole surface from the knee- to the ankle-joints. And I said at middle age, but I will add at any period of life beyond this. I have never heard a woman complain of it, while they frequently consult me about nettle-rash; and I agree with Dr. Thomason that, according to my ob-

servation, they are more frequently troubled with it than men, and I think there are obvious reasons why they should be. If I were going to name the subject of my query I would call it "Pruritus senilis," but I am no stickler for a name. I thus hastily write the above explanation for insertion in the *GAZETTE* because I think I was misunderstood by you, and by your reply to my query Dr. Thomason was misled, as would be all other readers of your valuable journal.

R. L. HINTON, M.D.

PRESCOTT, NEVADA CO., ARK.

[The case described by Dr. Hinton would rather come under the name of pruritus than urticaria, as we meant to indicate in our comments on the article. The method of production of the eruption, in our opinion, is precisely the same as in gastric urticaria, and we supplied the title of "urticaria from indigestion" as representing the most familiar example of eruptions so produced.—Eds.]

THE NEW TREATMENT OF PHTHISIS.

To the Editors of the *THERAPEUTIC GAZETTE*:

GENTLEMEN:—In an article in the *GAZETTE* for April 15, Dr. Wood refers to the difficulty with Bergeon's method of treatment of phthisis in private practice, in the cumbersome of the apparatus and the skilled labor required for the preparation of the gas.

It seems to me that these objections are obviated in the following described plan, which was devised and has been in use by myself for several weeks: A so-called soda-water bottle is charged at the factory with carbon dioxide, connected by a rubber tube with a Wolff-bottle partially filled with water saturated with pure hydrogen sulphide, and the Wolff-bottle again connected with a rubber bag having a stopcock. Pressing gently upon the lever of the soda-water bottle, the carbonic gas is forced through the sulphurous water, carrying the combined gas into the bag. When the bag is filled the stopcock is turned, a rectal nozzle is introduced, and the bag carried to your patient all ready for treatment.

My patients send for these bags and administer the gas to themselves after two or three lessons. Knowing the size of the bags, you can regulate the amount of gas used at each séance. The sulphurous water should be renewed after being used to fill a three- or four-quart bag two or three times. At ordinary temperatures the carbonic gas will take

up sufficient hydrogen sulphide in a bulk of three or four quarts of the combined gases for its safe use.

A decided collapse was caused in one of my cases by using six quarts of the gas as made above. My patients taste the sulphur soon after its administration, and continue to do so for hours. In about forty administrations it has been rejected but once. After introducing the rectal tube I press gently upon the bag, and after a minute or two the gas will pass in rapidly, causing a little colic; then I turn off the stopcock and wait a minute or two and turn on again.

This treatment has a marked effect in relieving the septic phenomena, chest-pains, dyspnoea, and diarrhoea. The sputa lessens in amount, becomes thinned and yellowish in color.

Again as to the apparatus, should there not be a soda-water manufactory at hand the carbonic gas can readily be generated and stored as proposed in a large rubber bag, and from this forced through the sulphur-water into the visiting-bag as required. The sulphur-water may be prepared by the druggist or the physician at his leisure, or the druggist himself may fill the administering- or visiting-bag upon prescription. Will not this plan meet the objections of cumbersomeness and the necessity of skilled labor at the bedside?

BYRON H. DAGGETT, M.D.

258 FRANKLIN STREET, BUFFALO, April 30.

GELSEMIUM AS AN ANTIDOTE TO OPIUM-NARCOSIS.

To the Editors of the *THERAPEUTIC GAZETTE*:

GENTLEMEN:—From the known physiological effects of gelsemium and my own experience in its administration, I came to the conclusion that it would prove an antidote to the lethal effects of opium, but had no opportunity of testing its qualities in this respect until July 26, 1885, when I was hastily called to see Mr. Frank C., a young man residing about two miles from this city, who had about two hours previously swallowed an ounce of laudanum with suicidal intent. I found him profoundly comatose, pupils contracted to a pin's point in size, face turgid and dusky red, carotids pulsating violently, so much so as to jar his head, respiration slow, etc. Having no stomach-pump, and not feeling safe in using apomorphine in his condition, I titillated his fauces, placed 2 scruples pulv. ipecac between gums, lips, and cheeks, gave him the bastinado, castigated bare legs and rump with

a handful of switches to near vesication without results. Stertor becoming more profound, I determined to test the virtues of gelsemium, and gave hypodermically 25 minims of the fluid extract. I repeated the dose every twenty minutes until one hundred minims had been given, when I paused, fearing to administer for the present more of this powerful remedy. I observed, however, when the second dose was given, that the carotids were acting with less force, and between one and two hours from the first dose the action of the carotids grew calm and dusky color of face markedly less. I now resorted to "masterly inactivity," and carefully watched my patient for near an hour; then his respiration became spasmodic and alarming. I immediately administered subcutaneously $\frac{1}{4}$ gr. sulph. strychnine in solution. Respiration soon became normal, and in view of all the features of the case I ventured another hypodermic injection of 15 minims gelsemium. Soon afterwards, perhaps thirty minutes, the patient became conscious, opened his eyes, and recognized every one present. His first desire was to urinate, and he passed an inordinate quantity. Thus in rather less than three and a half hours the patient had received subcutaneously one hundred and fifteen minims fluid extract gelsemium. Being now perfectly rational and able to sit up in bed, I left at 9.30 P.M., after giving nurses strict orders to keep him awake, walk him, etc., until 5 A.M. While walking in the yard the ipecac had its effect, producing full emesis, the ejected matters exhaling the odor of laudanum. Next morning's visit, 9 A.M., found the patient all right, but "feeling very sore."

W. D. HUTCHINGS, M.D.

MADISON, IND.

THE THERAPEUTIC PROPERTIES OF CORN-SILK.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—During the last three years, or ever since the introduction of corn silk as a remedy, I have had ample opportunity to test its therapeutic effects in those diseases for which it is recommended. I have no new qualities of this drug discovered, but merely desire to corroborate the statement of other physicians, who speak in favor of this remedy. My experience with the fluid extract of corn silk has been most satisfactory in every respect, having used it in many different forms

of acute and chronic diseases of the kidneys and bladder, and I find it a valuable remedy in these ailments. In all catarrhal disorders of the genito-urinary organs I find it superior to other medicaments I formerly tried. I have used it in retention and suppression of urine in adults and infants with the best success. In the acute stage of gonorrhoea, alternated with alkalies, it will relieve the scalding in passing water, allay pain, and shorten the first stage. In organic heart-disease, when there is deficiency of urine, it will act as a mild but certain diuretic, increasing the flow of urine when other stimulating diuretics have failed to produce diuresis. The fluid extract of corn silk, given in drachm doses, will also relieve the periodical attacks of dyspnoea in this trouble, and, alternated with 15 drops of the fluid extract of *cereus bonplandi*, I consider these two remedies as excellent palliatives in functional as well as organic ailment of the heart, believing that, besides its demulcent and diuretic actions, corn silk has considerable anodyne properties.

In regard to dosage, I found that in acute renal diseases, or in retention or suppression of urine, where a decided action is required, full doses—1 to 2 drachms of the fluid extract, well diluted with water—may be given, repeated every two or three hours until the desired result is obtained. In chronic cases, 20 minims to $\frac{1}{2}$ drachm, four times daily, in a wineglassful of water, an hour before meals, acts best. It may be given for weeks or months without deranging digestion, but the doses will have to be increased if given for any length of time. Therefore it is well, after giving the corn silk for two or three weeks in chronic renal cases, to alternate with other mild diuretics, such as buchu and acetate potassæ. Notwithstanding the fact that corn silk is an excellent remedy in irritable bladder when given in small doses, it will, when exhibited in large or overdoses, to a healthy person or in subacute cases, cause irritability of the bladder, palpitation, and restlessness; but these symptoms are easily relieved by some effervescent draught, such as citrate or bromide potassium.

If the preparation of corn silk has not been successful in the hands of some physicians, they very likely used an inferior article, as I myself was disappointed in its action when I prepared a saturated tincture from the green corn silk, or was furnished by my druggist with some weak preparation.

A. CRULL, M.D.

DITTMER'S STORE, MO.

Notes and Queries.

NOTE ON TWO ANTIPYRETICS.

I.—ANTITHERMIN.



Under this name M. NICOT publishes in the *Nouv. Remèdes*, 1887, 102, a new antipyretic, phenylhydrazin,—levulinic acid,—which is, chemically, closely related to antipyrin.

Commencing with phenylhydrazin, $\text{C}_6\text{H}_5 - \text{NH} - \text{NH}_2$, we may state that this body shows, almost more than any other that is to be met with in modern chemistry, the greatest reactive powers. Thus it has the quality of combining with aldehydes, ketone sugars, and forming with them perfectly well characterized and crystallized compounds. It shows the same properties also with regard to ketone acid and its ether. For instance, it combines with acetoacetic ether to the basis called monomethylchinizin, of which antipyrin is a methyl compound.

To the substances which combine with phenylhydrazin *levulinic acid*, $\text{C}_6\text{H}_5\text{O}_4$, belongs. This latter is obtained by applying dilute acid to levulose.

The mode of preparation of antithermin is as follows: Phenylhydrazin is dissolved in dilute acetic acid; on a solution of levulinic acid being added a yellow precipitate is formed, which, by means of crystallization from an alcoholic solution, produces well-formed crystals of phenylhydrazin-levulinic acid of the above-mentioned constitution, and possessed, as is affirmed, of antipyretic powers.

Regarding the dose to be administered, manner of application, and clinical experience, nothing is as yet known.

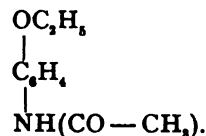
II.—ACETPHENETIDIN.

This is a German discovery. MESSRS. O. HINSBERG and A. KAST announce in the *Centralblatt f. d. Med. Wissenschaft*, 1887, No. 9, that *p*-acetphenetidin is possessed of considerable antithermic properties, as shown by a series of experiments (*Pharm. Zeit. Berlin.*, March 26, 1887). They gave doses of 3 to 8 grains, and were able in this manner to reduce the temperature of the human body on an average by 2°C . without any unpleasant secondary effects.

The preparation consists of colorless needles, which are soluble in water, still more so in alcohol and glacial acetic acid, and are devoid of taste. Their melting-point is 135°Celsius .

From these first communications it was not quite clear which chemical body was meant by acetphenetidin, it being also spoken of by others as "ascetphenidin," but since then the manufacturers have explained that acetphenetidin is the acetyl derivative of phenetidin,—that is, of the ethylether of paramidophenol.

The formula is



It is obtained from carbolic acid by the process of nitriting, separation of the artho- and para-nitrophenols, acetylating the latter, reducing the *p*-nitrophenol to *p*-amidophenol, which is called phenetidin, and acetylating the phenetidin with glacial acetic acid.

Antithermin and acetphenetidin are, therefore, now added to antifebrin, salol, chinolin, kairin, antipyrin, and thallin, the half-dozen of the newest and best-known antipyretics.

Antipyrin and antifebrin have indeed proved very formidable rivals of quinine, which, however, retains after all the first place among febrifuges.

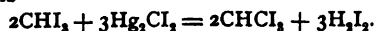
Antithermin possesses, at least, a very promising name, which in any case is of some worth.

Acetphenetidin has not yet received an abbreviated appellation. Perhaps "anticalorin" would sound well, although by no means correctly chosen. Why have none of the discoverers thought of calling a preparation "antiquinine"? for this search after new antipyretics is surely more often aimed at rivalling quinine than anything else. Concerning these latest productions of the antiquinine movement we must as yet await further tests and proofs.—*Pharmaceutical Record*, May 1, 1887.

IODOFORM AND CALOMEL.

An incompatibility observed in a mixture of iodoform and calomel has been investigated by Mr. DRESCHER with a view to ascertain the chemical change that takes place. Equal parts by weight of the two substances, when triturated together in a porcelain mortar, manifested no change of color, nor was there any noticeable reaction or foreign odor. Some of the powder, when placed in a white vial, well corked and exposed to direct sunlight, showed at the end of one hour signs of decomposition. After five hours the powder exhibited all phases of color from whitish to yellow, with numerous greenish and grayish specks. There

was also at the top some bright orange-red powder, which proved to be mercuric iodide. Another portion placed in an amber-colored vial and exposed to direct sunlight, behaved somewhat similarly, except that the decomposition took about three times as long. A third portion, placed in an amber-colored bottle and exposed to diffused light, showed no signs of decomposition at the end of one week, but after two weeks change was quite evident. Some of the powdered mixture, gently heated in a test-tube, gave off the odor of chloroform, especially when the iodoform and calomel were used in proportional quantities, and there was a formation of mercurous iodide, which, upon the temperature being raised, was converted into mercuric iodide. The reaction supposed to have taken place is—



—*Pharmaceutical Journal and Transactions*, April 30, 1887.

AN ANTISEPTIC FLUID FOR USE ABOUT THE EYE.

GRANDMONT reports a case of occluded lachrymal duct, in which he opened the duct and disinfected it with the following fluid :

Chloral. hydrat.,
Sodii salicylat., aa gr. viii;
Aque, ʒi.

—*Les Nouveaux Remèdes*, No. 8.

GASEOUS RECTAL MEDICATION IN PHTHISIS.

A fresh series of observations by M. PERRET appears to result in conclusions in general harmony with other recent trials of the method. He states that the gaseous injections have no microbicidal action; they can modify the bronchial phenomena and diminish expectoration, also influence nutrition for good, especially in the apyretic forms, like other medicaments, and hence are of value in relieving particular symptoms. The outcome of this appears to be that they are as good as, but no better than, other bronchial remedies.—*The Lancet*, May 28, 1887.

THE TREATMENT OF MORPHINOMANIA.

DRS. JONES and BALL have recently published an essay on the treatment of morphinomania, in which they state that they relied chiefly for the cure of these patients on nitroglycerin and sulphate of sparteine. Nitro-

glycerin may be administered as a one per cent. alcohol solution, while the sparteine is to be administered hypodermically in doses of from one to four centigrammes.

SO GERMAN, YOU KNOW.

["And I saw many strange things in heaven."—ST. JOHN.]

We speak of a coccus as causing the gleet,

For that is quite German, you know;

Iodoform use, since its smell is so sweet,

For that is quite German, you know.

We dilate the rectum with hydrogen gas

To kill the bacilli that through the lungs pass,

Then put our poor patient down under the grass,

For that is so German, you know.

A man may be shot in a glorious cause,

For that is quite German, you know;

We extract the bullet and wrap him in gauze,

For that is quite German, you know.

With carbolic acid we sozzle the wound

Until the poor fellow is up and around,

Or maybe is dead and put under the ground,

For that is so German, you know.

The comma-bacillus (we think so at least),

For that is quite German, you know,

Slips through a man's bowels as if it were greased,

For that is quite German, you know;

We use "antiseptics" to check the discharge

(The rate of mortality still is as large),

And next disinfect his grave free of all charge,

For that is so German, you know.

We'll find that bacteria hasten divorce,

For that is quite German, you know;

"Spirilli of homicide" follow, of course,

For that is quite German, you know.

A "microbe of lying" will be on the tongue,

And "melon-thief vibrio" found in the young,

The "germ of strong drink" will be seen at the bung,

For that is so German, you know!

At last when in Satan's hot home we will be

(For that is quite German, you know),

We'll use *sulphur vapors* to kill bacilli,

For that is quite German, you know.

Or if we to heaven instead emigrate,

Our harps, ere we use 'em, we will fumigate,

Our wings "sterilize" as we pass thro' the gate,

For that is so German, you know.

—*Kansas City Medical Index*, May, 1887.

— THE — Therapeutic Gazette.

Whole Series,
Vol. XI.

Detroit, July 15, 1887.

Third Series,
Vol. III. No. 7.

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Original Communications.

*HYGIENIC THERAPEUTICS—A LECTURE ON THE METHODS AND APPLICATIONS OF KINESITHERAPY.**

BY PROFESSOR DUJARDIN-BEAUMETZ, Paris, France.

GENTLEMEN:—In the last lecture we had under consideration the physiological effects which may be obtained from exercise and from movements. It now remains to see how far these physiological effects may be utilized in the treatment of diseases. But before undertaking this part of our subject,

* From advance sheets. Abstract of two lectures delivered in Cochin Hospital.

which is one of special interest, it seems to me desirable to explain, as briefly as possible, the procedures which may be put in usage to obtain these benefits; in other words, to set forth the methods of gymnastics.

When you take a general survey of these methods, you see that they may all be ranged in three categories. Some are performed without apparatus; others require the effective co-operation of a master,—this is Swedish gymnastics; others still demand the use of apparatus, whether fixed or free, or characterized by automatic movements.

Gymnastics without apparatus are divisible into two great groups,—home gymnastics,†

† Gymnastique de chambre.

whose object is the promotion of suppleness of the frame, and gymnastics which belong to the natural exercises, such as the various attitudes, walking, leaping, etc.

The first kind, or home gymnastics, is of special utility in therapeutics. It consists in making different parts of the body, and particularly the limbs, execute numerous movements, which may be of great variety, and combined in a thousand ways. You will find in all the manuals of gymnastics, and, in particular, in the official manual published under the direction of the Minister of Public Instruction, a description of all these movements which constitute "elementary gymnastics," and which comprehend movements tending to give suppleness to the head, trunk, arms, and legs, and to the arms and legs together.

Schreiber has much insisted on this kind of gymnastics, and his works have had a great popularity in Germany, where his treatise on "Medical and Hygienic Home Gymnastics" has passed through fifteen editions. In the method of Schreiber the head and limbs are made to execute movements of circumduction more or less rapid. It has been said that these exercises, while giving good results, cannot take the place of gymnastics properly so called, because that in these simple "home" movements, whose object is to confer suppleness, the individual has no resistance to overcome, and the exercise involves no muscular labor. I cannot agree with this view. All movement demands muscular labor, and it is easy to understand that by these movements, which are so effective in giving pliancy, one may put in play almost all the muscular groups of the economy. Moreover, these home gymnastics have this advantage, that they can be performed in all places, in one's own room, almost without a teacher, and in accordance with the simple indications furnished by the physician.

Before taking up the study of natural exercises, such as walking, leaping, I must give you a definition of the words *position* and *attitude*. Position is compatible with a certain muscular relaxation, while attitude always demands some amount of muscular activity. Thus, standing is an attitude, while sitting and lying are positions. Every gymnastic movement, to have a determinate end, presupposes an initial and terminal attitude.

Walking is one of the most useful of gymnastic exercises. Marey, in his work, the fruit of his studies carried on at the physiological station of Parc des Princes, has laid down some excellent indications concerning

certain points in walking. He has shown us that the quickness of one's gait increases in proportion as one diminishes the height of the heel of his boots. He has also shown us that when the sole of the boot exceeds the length of the foot by a certain figure, the paces are lengthened, and he has fixed at fifteen millimetres, this figure by which the sole ought to extend beyond the great toe. Lastly, he has shown us that when one walks with a rhythm of from sixty to eighty steps per minute, the length of those steps is increased.

In the case of infantry when on the march this walking rhythm is higher, the steps being quickened to one hundred and fifteen per minute. It has been affirmed that a man may walk eight kilometres and four hundred and fifty metres per hour. This estimate seems to me exaggerated, and I am more inclined to accept that furnished by Michel Levy, who maintains that an adult man in good health may, without overtaxing himself, walk ninety metres per minute, which would give five kilometres and four hundred metres per hour, and he ought to be able to keep this up for six hours.

We distinguish three rhythms in running, according to the number of steps taken per minute. In moderate running one hundred and forty are made; in rapid running, two hundred; some racers make as many as two hundred and forty. When you prescribe running exercises to your patients remember to enjoin that these running exercises shall be short, and intercalated between an initial and terminal walking exercise.

I have nothing in particular to say relative to leaping and dancing, and I come now to the second division of gymnastic exercises in general, those that are made with the assistance of a master, and constitute SWEDISH GYMNASTICS.

Swedish gymnastics consist in provoking the voluntary contraction of certain muscles, while the assistant opposes with the hand a certain amount of resistance. Here, then, the presence of a second party is indispensable in guiding or opposing the movements which are executed. Meding* has divided these movements into semi-passive and semi-active movements. In the first, the movements are performed with resistance on the part of the subject; in the second, with resistance on the part of the master.

You easily understand how, by combining in a thousand ways these double and syner-

* Meding, "On Medical Gymnastics." Paris, 1882.

getic movements, one may succeed in developing all the muscular groups of the economy ; at the same time it is plain that this mode must always be limited in its applications, as each pupil or patient requires a gymnastic professor. It has, therefore, been abandoned for the most part in France as a part of general gymnastics ; while, on the other hand, it is coming more and more into use as a mode of medical gymnastics, for it enables us to limit the gymnastic action to a particular muscular group ; and Schenström,* who has been the chief promoter of Swedish gymnastics in Paris, has shown us all the advantages which may be obtained from these special exercises in a great number of affections.

Gymnastics with apparatus comprise a great number of varieties. Sometimes the apparatus is fixed, sometimes it is movable, sometimes elastic, sometimes moved automatically. At the head of gymnastics with apparatus I would place that kind of gymnastics which Pichery, who is the originator, has styled "*opposition gymnastics*," of which you may see numerous applications in our wards.†

Struck by the advantages which the method of Ling gives, Pichery conceived the idea of rendering this method of general applicability, by substituting for the professor who opposes the movements of the pupil a sort of *parlor gymnasticon*, with elastic cords and well-padded rings for the extremities, which tend to force back the members making traction to their original position. You readily see how easy it is to vary the different tractions made on these elastic cords, so as to put in play almost all the muscular groups of the economy.

These "opposition gymnastics" have the advantage of taking up little room and of being available anywhere. The apparatus can even be adapted to the bed of the patient, so as to enable him, although bedridden, to execute movements of the different members, and obtain all the exercise which his condition permits.

These "opposition gymnastics," then, constitute an excellent kind of medical gymnastics, which we can utilize in our hospital wards, and in some cases on a large scale, as you can see in the use which I have made of them in our female wards.

The gymnastic apparatus with pulley-weights is very much like those above described as "opposition gymnastics." Triat

has constructed a very ingenious sort of cabinet, containing a series of weights, which are put in movement by means of elastic bands with handles, and the apparatus is arranged so as to exercise the different parts of the body. This apparatus is very useful for the purpose of home gymnastics, but is rather too high-priced and takes up too much room to be of general use.

You will not expect me to give a description of all the paraphernalia used in gymnastics, and which you will find described in the technical treatises on gymnastics. The most useful are the upright bars, or chest-bars, which render the shoulder-joints supple and expand the chest, the leg-weights to be used while in a sitting posture, the pulley-weights, which strengthen the arms and shoulders, the dumb-bells, the clubs, the swinging-rings, the horizontal bars, the inclined ladders which are climbed with the hands, the vaulting-horses, etc. There is an infinitude of these apparatuses designed to give variety to the exercises and render them more attractive, all of which you can see in any of our Paris gymnasia.

Lastly, I must not omit to mention that sort of mechanical gymnastic apparatus which goes by steam, and is the invention of Zander, of Stockholm. Many of you must have seen a number of these gymnastic machines at the Paris Exposition in 1879, in the Palace of Industry. There was, indeed, a large gymnasium building erected on Chaussée-d'Antin Street expressly for this kind of gymnastics, but it was soon closed for want of patronage, so little enthusiasm have we Frenchmen for these exercises.

Zander, in his method, had taken the Swedish system for his model, substituting for the "professor" certain automatic apparatuses endowed with variable movements. There are appliances for giving motion to the knees, others for giving a movement of rotation to the shoulder, others, still more complicated, for imparting a suppleness to the trunk. In a word, there are parts of the apparatus adapted for producing a multiplicity of movements, and bringing into play all the muscles. Some of these movements are active, some are passive.

This species of gymnastics, which bespeaks on the part of the founder much hard work and great ingenuity, is very popular in Stockholm, where it is applied to medical uses. Thousands of patients every year flock to that city for gymnastic treatment in the great establishment which Zander has built.

* Schenström, "Reflections on Physical Exercises and Bodily Movements." Paris, 1880.

† Pichery, "Gymnastique de l'Opposant," etc. Paris, 1871.

You will see, as we go on, that this kind of mechanical gymnastics has been applied to diseases of the heart, and Zander, Nycander, and a large number of German and Swedish physicians affirm that they can thereby cure these affections, at least in their initial period. I shall have to allude to this subject farther on.

Thus far we have considered gymnastics in their application singly to the treatment of diseases or to the development of the body. Ordinarily, however, they are associated with other hygienic means, such as massage, hydrotherapy, balneotherapy, and dieting. The aggregate of all these means, when they are directed towards a special end, bears the name of *training*, and just as in zootechnics we see man, by the application of these means to the equine race, create varieties of animals fit for such and such uses, and in particular for the race-courses, so also we may by a similar kind of training put individuals in the best possible conditions to attain a given end. Thus it is that we have precepts of training for the boxer, for the pugilist, which Bouchardat has so well studied, for the various exercises of sport, foot- and horse-racing, steeple-chase, rowing, etc.

Training, which, in the case of horses, is but the gradual application of gymnastics in the most ancient and best known sense of the word, comprehends in man, besides the employment of graduated gymnastic exercises, a series of means which Bouchardat has classed under the seven following heads: 1. Evacuants; 2. Alimentation; 3. Care of the skin; 4. Pure air; 5. Moral influence; 6. Abstinence from venery; 7. Temperance.

The end to be obtained by putting in usage all these hygienic and therapeutic means is the following: To eliminate the liquids and solids which have become vitiated or detrimental to the harmony of the functions; to impress a new activity on nutrition; and to favor the development of organs towards a given end. Let us rapidly examine these different points.

As for purgatives, all trainers give them a place in their method. Bouchardat protests against this practice, and urges the suppression of drugs from this aggregate of hygienic means. You will see that when we come to apply training to the cure of certain affections, and in particular of obesity, we shall have to have recourse to the purgative treatment, which, moreover, is really indicated. Recall to your minds what I said in my first lecture concerning the physiological effects of

exercise. I showed you that exercise augments the production of leucomaines, and as the most important channels for the excretion of these toxic alkaloids are the intestine and the kidney, you understand the utility of promoting the functions of both these emunctories. One of these indications is fulfilled by purgatives.

As for diet, trainers recommend little drink and a dry diet. You remember that I had something to say about this subject last year.

The end of this dry diet is to diminish, as much as possible, the weight of the intestinal mass, which is a dead and useless weight. In the horse, this system of dieting, which consists in giving nutritious azotized aliments in little bulk and but little drink, has for its effect to give these animals the *greyhound stomach* which characterizes them.

Trainers then recommend their subjects to eat the dark meats, such as beef, mutton, and game; they suppress the white meats, starches, and fats. Bouchardat does not approve of this proscription, and if he favors the exclusion from training diet of starchy substances, he insists upon the free use of fats, which seem to him essential.

The care of the skin plays a considerable part in the training, whether of man or of animals. In the latter, grooming, according to Sanson, has a quite special action. It promotes reflexly the vaso-motor circulation of the different viscera; and you cannot fail to have noticed the carefulness and the patience with which race-horses are rubbed and curried. In man the same practices ought to be put in usage, and it is a good plan after the sweats to which the subject under training is subjected, to give him a brisk and thorough rub down with a flesh-brush and with flannel, and to follow these frictions by massage with the hand well oiled with vaseline.

It is taken for granted that hydrotherapy plays a considerable rôle in the means put in use to promote actively the cutaneous functions, and I shall return to this topic in the lecture which I propose to devote to this hygienic agency.

I need but allude to the necessity of pure air, which is a very useful adjuvant, facilitating, as it does, the combustions of the economy; nor shall I stop to comment on moral influences, which always depress the organism when they are excessive; nor on venereal abuses, which have the same effect; nor on the necessity of temperance, which, unfortunately, is the part of training which is, as a rule, observed the least, especially among

the English. It is, in fact, a common thing to see the English jockeys and boxers give themselves to alcoholic abuses.

Such are the various phases of training, and you will see that the precepts here given, when applied to the treatment of a great number of diseases, and especially to polysarcia and diabetes, are attended with remarkable results. I have now completed the description of the great methods of gymnastics, and pass on to the application of these methods to the treatment of diseases.

THE APPLICATIONS OF KINESITHERAPY.

We have seen that gymnastics modify respiration, circulation, innervation, digestion, and nutrition. We will now consider the benefits which may be derived from the methodical application of gymnastics in the different diseases of the systems and organs which subserve these functions.

Respiration plays a preponderant rôle in gymnastics, and it was Dally who thirty years ago said that respiration was the pivot of every gymnastic exercise. Authorities have even founded an aggregate of exercises to which has been given the name of respiratory gymnastics.

Dally recommends inspiration by the nose and expiration by the mouth.

Guye, of Amsterdam, maintains that both parts of respiration should be performed by the nose, and that neither inspiration nor expiration should be performed by the mouth. He considers respiration by the mouth as extremely injurious, and quotes with approval the saying of the American traveller, Catlin,—"If you will breathe with your mouth shut, you will prolong your life." Guye even insists that children should be habituated from infancy to breathing through the nose, though this necessitates closing the mouth by a special chin-piece, such as Delstanche has devised.

All this goes to show that there is nothing new under the sun, since it recalls to one's mind the method of Demosthenes, who used to put pebbles in his mouth and walk rapidly, thus carrying out the principles so many centuries afterwards laid down by Guye and Delstanche. Foreign bodies in the mouth prevent respiration by the buccal cavity, and compel respiration by the nose. Demosthenes, in adopting this practice, may not have improved his manner of speaking, but he certainly would augment his respiratory capacity in forming the habit of taking full breaths, which constitutes for the orator as well as

for the singer a point of the greatest importance.

In the previous lecture I told you that among the methods of gymnastics singing and chanting have a prominent place, and that a great many professors of gymnastics insist on the necessity of concert-singing while the pupils perform their exercises.

Dally, in his special treatise "On the Methodical Exercise of Respiration," has well described the different movements applicable to respiratory gymnastics. These exercises are four in number.*

In the performance of the first exercise, Dally places the patient in a vertical attitude, with the back against a wall, then both arms and hands being extended horizontally in front, the patient forcibly and slowly separates the fingers while he bends the thorax forward; he remains in this position thirty seconds, makes a deep nasal inspiration, and resumes the initial position, then makes a deep expiration, and repeats this exercise six times in succession.

In the second exercise the arms are dropped by the side of the body, then brought forward, the fingers on the stretch, and slowly raised to a vertical position above the head with the palms down, then brought back in front, when a deep inspiration is taken. The arms are then slowly let fall upon the sides of the trunk, with the palms upward.

The third exercise consists in executing with the arms two double lateral circles, from behind forward, from below upward; the circles should be made with a full sweep, and care should be taken to bend the body forward every time that the arms are thrown backward, and never to hit the loins. This movement ought to take place almost entirely in the scapulo-humeral articulations. Inspiration whenever the arm is raised, expiration when it is lowered.

The fourth exercise consists in alternate flexion and extension of the trunk, the arms being crossed.

But there is another and simpler exercise which will render you much service in developing respiratory capacity, viz.: to make the patient count with a loud voice as long as he can do so without losing his breath. Before commencing to count, the patient should make a deep nasal inspiration. You can even

* Dally, "On the Methodical Exercise of Respiration in its Relations to Gymnastic Conformation and the Health in General." (*Bull. de Thér.*, 1881, t. ci. p. 197.)

by the aid of this process calculate the respiratory capacity of the chest, for with the ordinary thoracic capacity one ought to count as far as fifty or sixty without losing breath.

I do not here need to describe the different types of respiration; they are, as you know, of three kinds: the abdominal type, due to the fall of the diaphragm; the costo-inferior type, produced by the elevation of the inferior ribs, which project anteriorly beyond the xiphoid appendix; the costo-superior or clavicular type, due to the rising of the clavicle. According to Dally, the largest quantity of air which can be made to penetrate the lungs is obtained by the nasal costo-superior inspiration; he recommends also to contract the abdominal muscles at this period of respiration. Respiratory gymnastic exercises, in augmenting the force of expiration, attain the same results.

Such respiratory gymnastics will render you great service in all diseases where there is a special indication to augment the pulmonary capacity. At the head of these diseases we must place pleurisy, or rather the sequelæ of pleurisy; pleuritic adhesions consecutive to effusions diminish the thorax of the affected side, and to such a degree that the patient generally bears for life the marks of the disease. By the practice of these respiratory gymnastics you will often succeed in causing this thoracic deformity to disappear.

Empyema has the same consequences, and here respiratory exercises will render you the same service; for my part I always have recourse to them. By these forced respirations and the chest-development which follows you will often break up pleuritic adhesions binding the lung to the vertebral column, and you will thus forward the coming together of the costal parietes and lungs, and the formation of those adhesions between the two surfaces which are so essential to the cure. In pulmonary emphysema, where, by reason of the damaged condition of the air-cells, the patient sees his pulmonary capacity diminishing from day to day, you can do much to obviate the inconveniences resulting therefrom by respiratory gymnastics.

As Basil Ferris has well shown, it is the expiratory act which is the most enfeebled in emphysema, and therefore he has proposed to make up for this deficiency by an elastic respirator, which I have described in my "New Medications" (Am. ed., p. 133).

Of late years all authorities who have written on gymnastics have insisted on the application of kinesitherapy to the prophylac-

tic treatment of pulmonary phthisis,—*i.e.*, before any morbid manifestation has appeared on the part of the lungs. To demonstrate the advantages of this kind of treatment, the following points have been emphasized:

First, our attention has been called to the narrowness of the chest in persons predisposed to tuberculosis. Fourmantin, in his treatise on the "Deformities of the Thorax," has shown that the thoracic index in tuberculous subjects is always very high, and varies between 133 and 152, while, on the other hand, in the normal state it ought always to be below 128; moreover, it is the rule, from a clinical point of view, to consider narrowness of the chest as favorable to the development of tuberculosis.

It has also been remarked that in tuberculous patients there is not only narrowness of the chest, but atrophy of the respiratory muscles. One of my most promising pupils, Dr. Stackler, has shown, in some researches made in my service, that contractility is always lessened in the pectoral muscles corresponding to the side of the chest the most affected.

It is easy to understand how gymnastic exercises may remedy this muscular atrophy and this narrowness of the chest by increasing the muscular force and respiratory capacity.

Burq has made plain by figures the favorable influence of these respiratory gymnastics on tuberculosis, by showing that persons who exercise their lungs are less likely to contract phthisis than other persons. Thus it is that, from statistics covering a period of twenty-six years, Burq has shown that the military musicians of Paris and of Versailles furnish three times as few phthisical patients as the other soldiers. Lastly (and here I continue citing only writings of recent date), Lagneau, in his successive communications on the measures of hygiene most suitable for lessening the frequency of phthisis, shows the influence of a sedentary life on the diminution of function of the respiratory organs, and, according to his researches, an inactive in-door life is one of the most favorable conditions for tuberculosis.

All these data, which were published before Koch's discovery, I believe to be still exact and reliable.

The question of a *suitable soil* remains always predominant, and if we are all continually exposed to the ravages of the bacilli and yet resist their incursions, it is because our organisms struggle to advantage against influences tending to destroy them. Gymnastic exercise is one of the most useful

agents for maintaining our forces in perfect equilibrium; hence, as viewed from this important side of the question, gymnastics must ever be called upon to render service in tuberculosis.

But this is not all; in these very data we find grounds on which to base our affirmation of the utility of these corporal exercises. You know that it is on these facts of bacteriology that we to-day base the generic union of scrofula with tuberculosis, and if clinical experience still finds clear-cut differences between them, pathological anatomy and bacteriology agree in confounding scrofula and tuberculosis in one and the same diathesis.

Now, in regard to scrofula, gymnastics constitute one of the most effectual curative means, by favoring the operations of hæmatisation, by augmenting the respiratory functions, by regulating the development of the body and improving nutrition.

If gymnastics may render us great service in the prophylactic treatment of tuberculosis, one should be very chary in their employ when the tuberculous lesions have attained a certain stage; you know well, in fact, that everything which congests the thoracic organs also augments the gravity of pulmonary accidents, and is especially likely to cause hæmoptysis.

Do not forget, also, that overwork and over-fatigue debilitate the organism, and thus make it a suitable culture soil for the microbes of tubercle. You should therefore enjoin on the tuberculously predisposed a certain moderation, variable according to the subjects, in the use of physical exercises.

The action of bodily exercises on the circulation gives scientific warrant for the application of these gymnastics, on the one hand to the treatment of diseases of the heart, on the other to the treatment of anæmia. If on the first point there is not unanimous agreement, this is not the case with respect to anæmia. Everybody, in fact, admits the happy influence of gymnastics in the therapy of anæmias, and in particular of chlorosis, and this, through the augmentation of the pulmonary capacity and the increased activity of the cardiac pulsations occasioned by these exercises.

You know that every respiratory act, by bringing a greater quantity of blood in contact with the oxygen of the air, promotes the gaseous exchanges and directly enhances the functions of the blood-globule. To this immediate action on the blood-globule are joined the direct effects on nutrition; the appetite is quickened, the muscular strength

augmented; and thus you understand the manifold benefits obtainable from gymnastics in the treatment of anæmia. In this category of exercises must be included walks in the open air, mountain excursions, swimming, horseback-riding, and all the feats of gymnastics which are not too severe and too exhausting.

It was in Germany that the idea originated of applying to the treatment of diseases of the heart, and in particular of fatty degenerations of this organ, corporal exercises and fatiguing tasks. Cœrtel, and his pupil Schweninger, have been the most earnest advocates of this method. They contend that by corporal exercises you excite the fibrillary contraction of the cardiac muscle, and thus augment the contractile power of the heart, which manifests itself by increase of the arterial tension. Moreover, the augmentation of the pulmonary capacity clears the lungs, combats cyanosis, and facilitates the contraction of the right ventricle.

Therefore these German authorities recommend two sorts of exercises,—walking on level ground, and, first and foremost, mountain-climbing. In subjecting himself to this latter exercise, the cardiac patient undergoes a real gymnastic training proportioned to his forces, a training which enables him every day to increase the distance to which he can climb. You see to-day this method applied in the Tyrol and in a great number of Alpine stations. Benches arranged at places here and there, and at variable heights, indicate the length of the ascent which the patient with heart-disease is expected to make every day.

Other medical authorities have gone even further, and if Schol, of Frankfort, limits the exercises imposed on cardiac patients to the practice of the Swedish method, Classen prescribes real gymnastic movements, and would have these patients engage in all the corporal exercises of the gymnasia. Sommerbrodt and Heilighenthal approve also the method of Cœrtel, and all these authorities are agreed in pushing the exercise, whether it be walking, climbing, gymnastics, till the cardiac patient experiences some degree of breathlessness and dyspnœa.

What is the therapeutic value of these procedures? To decide this question, we must review the physiological action of corporal exercises on the muscular structure of the heart.

You remember that in the last lecture I had something to say about over-fatigue of the heart, and the theories which have been

broached to explain the state of the heart after too exhausting labors. Whether you adopt the hypothesis of primary hypertrophy, or that of myocarditis, or even that of the toxic effect of leucomaines, the result is always the same,—that is, these fatigues lead to the arrhythmia of dilatation of the heart, and finally to asystolia. All writers who have studied overstrain of the heart are unanimous in this regard, and you will find in the descriptions of Peacock and Albutt in England, of Seitz, Frantzel, Otto, Hahn, Curshmann, and Leyden in Germany, and of Daga and Coustan in France, an almost absolute clinical identity as regards the symptoms of overstrain of the heart.

Having settled these facts, let us see what takes place when we attempt to apply corporal exercises to diseases of the heart. Whatever may be the cardiac affection which you are endeavoring to combat, whether it be alteration of the orifices or of the myocardium, the heart, in endeavoring to overcome its obstacles, tends always to undergo hypertrophy and degeneration. For if the heart, by the histological constitution of its muscular fibres, is a muscle similar to the muscles of animal life, it differs from these by the dominant fact that it is never at rest, and that you can never assign inaction as a cause of atrophy of this muscle, as you can of other muscles.

What, then, do corporal exercises effect? They increase the contractions of the heart, and favor its hypertrophy and degeneration. This result may be favorable in the period of compensation, but it is unfavorable in that of degeneration; and, as the one fatally entails the other, our conclusion is this, that extreme caution and prudence should be used in the employment of these hygienic means, and that if it is a good thing to exercise the heart within reasonable limits, there is always danger of exhausting that organ.

Hence all the tact and judgment of the experienced physician are brought into practice when it is a question of prescribing corporal exercises to patients affected with heart-disease, and such patients should be counselled to begin moderately, and increase little by little every day the amount of exercise which they can well bear. The Swedish gymnastics, graduated walks, ascents made in a methodical and progressive manner, may render you some service, but you should always watch your patient, and examine the results of these exercises on the heart and general circulation.

I have little to say respecting the applica-

tion of gymnastics to the troubles of digestion. I ought to recall to your minds, however, that these exercises augment the digestive functions. Kinesitherapy is applicable to the treatment of anorexia and dyspepsia, and one has only to test in order to verify the saying of Chomel, "A man digests with his legs as well as with his stomach."

But there is another point which I desire to emphasize, viz., the treatment of constipation by gymnastics, and, in particular, by abdominal gymnastics. In fact, just as we have seen described certain kinds of respiratory gymnastics, so also there is an aggregate of movements and of exercises to which has been given the name of abdominal gymnastics.

It is for the most part the Swedish physicians who have interested themselves in these abdominal gymnastics, and Nycander, of Stockholm, has given us a complete description of these exercises, which really appertain much more to massage than to gymnastics. These consist in passes, pressures, tappings, and shocks of the abdomen, of which I shall say more in the next lecture, when I come to speak of massage.

There are, however, other exercises of a purely gymnastic nature which very happily combat constipation, and augment in notable proportions the tonicity of the abdominal muscles. These exercises are of two orders. One kind consists in flexions of the trunk, the subject being either standing or sitting, the other in movements of elevation of the arms. In directing flexions of the body, you may to advantage prescribe the opposition gymnastics above described. The patient sits on a chair with his feet braced against a stool, then grasps with his hands the padded handles; then, with arms extended, executes a series of tractions and relaxations, which compress the abdomen.

To impart increased tonicity to the abdominal muscles, and especially to the rectus, whose relaxation is one of the causes of that obesity which Brillat-Savarin has characterized by the word *gastrophorous* (big-bellied), where you have a plump abdomen and relatively slender limbs, you can make use of Dally's *wall exercise*, which consists in standing a patient against a wall, making him bring his arms up stiffly above his head, then swing them back and forth describing a half-circle.

I come now to the application of gymnastics to muscular disorders. I have told you that gymnastics augment the volume of the muscles and regulate their contractions, hence

these exercises have been found of utility in three kinds of muscular affections,—atrophies, contractures, and chorea.

There is no better treatment of muscular atrophy, from whatever cause originating, than gymnastics, and here we witness the triumph of the Swedish Movement Cure, which enables us to limit the exercise to a given muscular group. You readily understand the service which this species of gymnastics may render in such cases. These muscular atrophies produce also those bony or articular deformities of the skeleton, the treatment of which occupies an important department of infantile surgery,—orthopedics. In these deformities nothing more conduces towards a cure than the practice of gymnastics. To accomplish this result numerous means have been proposed. Some have advised the use of mechanical appliances, more or less complex, for the correction of these deformities, and all sorts of methods have had their day, from Andry's Orthopedic Cure to that of Scarpa. At a later period we have seen the prevalence of Jules Guérin's method of tenotomy, which was long so popular among surgeons. Lastly, we come down to the modern period, when, under the influence of Bouvier, Bouland, of Dally, and of Pravaz, surgeons have studied with greater care the causes of these deformities, and have endeavored to indicate the treatment for each.

I need not recall to your minds the meaning of the words *kyphosis*, *lordosis*, and *scoliosis*.

You know that the first of these deformities is characterized by curvature of the vertebral column, with convexity posterior, while in *lordosis* the convexity is anterior, and in *scoliosis* the curvature is lateral.

In all these malformations gymnastics render an important service, but they should be directed by the best medical judgment. Care should be taken that the compensatory curvatures shall not augment the deformity already existing. It is, then, always under the eye of a skilful and experienced physician that such exercises should be undertaken.

Bear in mind that in the case of *kyphosis*, as well as of *lordosis*, the efficient cause, in the majority of cases, is tuberculous softening of the vertebræ, in consequence of which the vertebral column presents so feeble a resistance as to give way under strains and lead to grave consequences.

You should, then, wait before attempting gymnastic movements in such cases, and before neglecting the use of such fixation apparatuses as Bonnet's troughs, or the plaster

of Paris bandage, till cicatrization and the new ossification of the vertebral column shall allow you to interfere without danger. But there are deformities like *scoliosis*, and the spinal distortions so well described by Dally, which are quite amenable to gymnastic treatment.

Among the exercises which you can prescribe to your patients in order to promote straightening of the head and trunk, there is one mentioned by Tissot which deserves to find a place here on account of its simplicity. Tissot mentions the fact of a boarding-school mistress who, in order to compel her pupil boarders to walk erect, made them carry on their heads a light object of rather unstable equilibrium (such as a brick or piece of wood), and obliged them to walk and to run without letting this object fall.

This is, I think, a practice which might often be employed to advantage, for you must often, like myself, have noticed that in countries where women have the habit of carrying milk-pails and other burdens on their heads, they are distinguished for their portly, supple, and erect forms.

Swedish gymnastics and opposition gymnastics have considerable utility in the treatment of these deformities. To the muscular inequalities, which are the efficient cause of these deformities of the skeleton, must be opposed an inequality of efforts, so as to exercise the atrophied muscles, and immobilize the muscular group which, by its preponderance of action, has entailed the deformity of the skeleton. This result is attained by the resistance movements. For further particulars as to the orthopedic treatment of these deformities I must refer you to the works which have been published on this subject, and which are now quite numerous, such as, especially, those of Bouvier, of Malgaigne, of Dally, of Saint-Germain, of Leblond, etc.

Gymnastic exercise is quite as efficacious in the treatment of certain convulsive affections, and, in particular, of chorea. Since the introduction of gymnastic exercise into the hospitals, we have seen it applied to the treatment of chorea, and with striking success. Blache has given us the most complete particulars in this regard, showing us, in 1854, that out of one hundred and fifty-eight cases of chorea, one hundred and two recovered in thirty-nine days, and six in one hundred and twenty days under gymnastics associated with sulphurbaths. All previous and subsequent observers are unanimous in recognizing the good effects of gymnastics in this disease, and authorities

such as Germain Sée, Becquerel, Parrot, and Jules Simon are earnest advocates of the movement cure of chorea. What kind of bodily movements are likely to be of most benefit in this disease? Laisné, who has carried out this treatment under the direction of Blache, has furnished us the most precise indications in this regard, and his studies in this department have since been completed by Pichery, Leblond, Heiser, and others. These gymnastic applications vary according to the period of the disease and its intensity.

In the grave choreas, especially in those of paralytic form, only massage is practised; then, at a less intense period, the child is made to execute passive movements, affecting principally the parts where the choreic movements are most pronounced. These passive movements consist in delicately seizing the choreic member, and making it execute rhythmical movements, at the same time compelling the little patient to count in a loud tone of voice in concert with the preceptor. In exercises of this kind there is demanded on the part of the preceptor a great deal of patience and no little skill to keep from struggling with the little patient and yielding to his convulsive movements. When these movements are still less intense, you can make the child perform some exercises on the "orthopedic ladder." Lastly, when the incoordination becomes still less, you may have the child execute movements of a decidedly rhythmical character, and here chanting, by giving a cadence to these movements, has a real utility.

To sum up. Extreme skill and prudence are required in the employment of gymnastics in the treatment of chorea, and an experienced physician or a master of gymnastics ought always to direct them.

The application of gymnastics to chorea leads me to speak of the gymnastic treatment of affections of the nervous system in general.

I have told you that without adopting the exclusive opinion of DuBois-Reymond, who sees in gymnastics only an exercise of the cerebro-spinal system, I am inclined to regard gymnastics as promotive of equilibrium between the functions of the brain and spinal cord. Therefore to all nervous, ataxic, neurasthenic persons, a class of patients so numerous in our large cities, to all those who are broken down by severe mental work, to all who by reason of being entirely devoted to sedentary official duties give little or no time

to the exercises of the body, gymnastics are not only useful but a necessity.

It is not enough to know that in such cases gymnastics may give marvellous results, you must also be able to apply them, and here you will meet with difficulties. If your patient is a man, the thing is easy enough; and if some of our patients object to going to the gymnasium, almost all are willing to try boxing and fencing. But where the question presents greater difficulty is in the case of female patients. All naturally object to gymnastics properly so called, and you hardly like to propose, or they to accept, fencing as an exercise. As for horseback riding, this kind of exercise is quite popular among our neighbors across the Channel, but it is repugnant to our French ladies. Horseback-riding, from a gymnastic point of view, is an exercise which develops unequally the muscles of the organism, but which, at the same time, presents the great advantage of requiring early rising on the part of the patient and rides in the open air. Unfortunately, this is an exercise which only those in somewhat affluent circumstances can afford. As for the middle and poorer classes, you will have to be content to order long walks, especially in the open country, mountain excursions, and sports, such as lawn-tennis and croquet. All your knowledge and judgment will be demanded in ordering exercises appropriate to the position in life and the situation of the patient who consults you.

We now pass on to the application of gymnastics to the treatment of hysteria.

Are gymnastics capable of curing hysteria?

I cannot say yes to this question. I believe there are even cases of hysteria where gymnastics are more detrimental than useful. At the same time there are other cases where this multiform neurosis may be usefully modified by kinesitherapy, especially if you combine hydrotherapy with it. Muscular fatigue, in fact, often enables these patients (if I may use the expression) to *discharge* their nervous systems,—to work off their surplus of force, and under these two hygienic means, physical exercise and hydrotherapy, we see sleep supervene and the nervous phenomena calmed. I have had a little experience in this kind of treatment, having been enabled for more than a year, owing to the kindness of Pichery, to try his opposition gymnastics on a great many female patients in my wards.

You must, like myself, have been often impressed by the fact that while all, or nearly all, our patients are men who have led active lives, demanding a considerable and often

excessive expenditure of muscular forces, our female patients, on the other hand, are persons who have pursued sedentary occupations, which, whether carried on sitting or standing, do not demand much labor on the part of the muscles. Hence we see a series of morbid phenomena resulting from these habits of inactivity, phenomena which we may very happily combat by gymnastics. It is even to be desired that these gymnastic exercises should be more generally adopted in our hospitals, and that we may be enabled to give our poor patients the benefit of this salutary association of hydrotherapy and corporal exercises.

If the multiple nervous states connected with hysteria are tributary to treatment by gymnastics, there is another neurosis quite as grave, or even more so, namely, epilepsy, in which great moderation is requisite in the use of gymnastics. To the epileptic, horseback-riding and swimming are absolutely interdicted; a fit during these exercises might result in death. It is the same with all the exercises of the gymnasium performed with apparatus. You can, however, make free use of those kinds of gymnastics which give suppleness, and which I have called "*gymnastique d'assouplissement*." At the Salpêtrière, all the young epileptics are made to perform these exercises of suppleness, and very good results are obtained therefrom, both from the point of view of physical development and the prolongation of the interval between the fits. Do not forget that walking, as well as gardening and farm-work, have a favorable influence in the treatment of this disease.

In idiocy, which is sometimes found associated with epilepsy, gymnastics have a favorable influence. In the case of these forlorn, pitiable beings, who have an instinctive prompting to locomotion, which they manifest by disordered and aimless movements, gymnastics regulate these movements, habituate the child to obedience, lessen the tendencies to masturbation, and tend in a certain measure to develop intelligence. Hence all authorities who have had to do with the education of idiots—Esquirol, Belhomme, Delasiauve, Voisin, Bourneville—have remarked the beneficial effects of gymnastics in the training of these unfortunates, and you can see at Bicêtre, in the idiot department, the brilliant results obtained by Pichery from gymnastics. Here it is movements of an exact, rhythmical character—movements in concert, accompanied by singing—which seem to give the best results.

But I have told you that it is chiefly by their

general action on nutrition that gymnastics take a preponderant place in the treatment of diseases. In exciting the organic combustions by the increase of the respiratory capacity, in energizing the muscular and inter-molecular oxidations, in favoring the vitality of the cell, gymnastic exercise is perhaps the most powerful modifier of nutrition. Hence in all diseases where nutrition is compromised you will find that kinesitherapy operates favorably.

There are three diseases where nutrition is especially at fault: obesity, the uric diathesis and gout, and diabetes. In the treatment of these three diseases exercise plays a preponderant part. As for obesity, I have already in former lectures shown you what sort of hygienic rules the corpulent should follow, and in this hygiene I have given a place to exercises and massage. To this point, then, I need not return. Here it is especially to training practices that you must resort, and a rigorous system of training is more beneficial than any other kind of treatment. I must also remind you of the utility of abdominal gymnastics, and of such movements above described as "wall exercises," in the case of individuals who, without being absolutely polysarcic, have the abdomen a little too prominent (the big-bellied men of Brillat-Savarin). This condition results from a flabby, toneless state of the abdominal muscles, which you may often signally remedy by the exercises which I have just pointed out.

In the uric diathesis and in gout exercise is indispensable, and this is a fact known from all antiquity. Under exercise the waste matters of the organic combustions are better got rid of, and uric acid tends to disappear.

I cannot go back to this question of urea and uric acid, which we treated quite fully last year while on the subject of diet in gout. It is enough for me to remind you that the production of uric acid, whatever view we may take of its origin, is in direct relation with a slowing of nutrition in general, and this is combated by exercise, which has an opposite effect. Interrogate most of your gouty patients and you will find that the larger part of them err by want of exercise.

Besides the phenomena of combustion, corporal exercises promote perspiration in gouty patients, and this is salutary because, the cutaneous surface being vicarious with the kidneys, urea and uric acid are eliminated by this excretory channel; but these exercises must not be carried too far. Scudamore long since showed us that often attacks of ne-

phritic colic or of gout supervene in gouty subjects after fatiguing tasks, such, for instance, as too prolonged devotion to the pleasures of the chase, and Lécorché has cited facts of this kind. You must, then, insist on daily exercise in moderate amount, and in proportion to the state of your patient's forces.

Salmouth has even claimed that by forced marches one may arrest an attack of gout in its incipency. Unfortunately, this is not so, and when once an attack is begun, even passive exercises must be forbidden. When deformity of the limbs or muscular atrophy has rendered walking impossible, it is not even then necessary to abandon exercise, and you will see in the next lecture that massage will render you excellent service; you can also at this period recommend horseback- or carriage-riding.

Besides nephritic colic, the gouty subject is liable to biliary colic. In biliary lithiasis gymnastics are useful; they favor the combustion of cholesterine, the basis of calculi, by the activity which they give to the organic exchanges. At other times when limited to abdominal gymnastics, such exercise facilitates the flow of bile and prevents its stagnation, and this of itself is a matter of no small moment.

Lastly, in diabetes the action of gymnastics, as Bouchardat has shown, is of the first importance, and constitutes, with dieting, the basis of the hygienic regimen of this disease. Corporal exercises augment the combustions without increasing the proportion of urea, diminish the quantity of sugar, and favor the functions of the skin. Here, as in polysarcoma, the general rules of training must be followed, caution being taken not unduly to fatigue the patient.

Recall to mind that spirited and charming volume of Cyr, entitled "The Impressions and Adventures of a Diabetic" (Paris, 1881). Cyr's diabetic patient travels over the different countries of Europe, and in each metropolis where he stops he consults some physician eminent in the treatment of diabetes. In Paris he applies to a certain Prof. P. (he should have said Prof. B., for he has given an exact picture of my venerated master Bouchardat), and under the title of an "original consultation" Cyr gives the routine of daily exercises and the bill of fare prescribed for his patient for one week. The exercises were to consist in digging the earth and removing the soil with a wheelbarrow, in marching with a company of infantry, in several times making the ascent of the towers of Notre Dame, and in

walking around Paris by the boulevards in the suburbs, etc. While making due allowance for the imagination of the romancer, it must be admitted that there is a good deal of common sense in the hygienic prescriptions there laid down, and that it is a good thing to order exercise under all its forms to the diabetic.

Only you must bear in mind that diabetics are generally aged persons, and they have neither the courage nor the energy of one of our recent chemists, whose death France deplores, and who, when attacked with diabetes, became one of the noted gymnasts of the day. The greater part of these patients refuse to go to the gymnasium. In such cases, besides fencing, which is sometimes acceptable, and long walks, I cannot too much recommend gardening and joinery. Nothing, in fact, can be better than garden-work; besides labor in the open air, the patient in digging, weeding, raking his garden, executes numerous muscular movements which cause fatigue and sweating; but all diabetics, unfortunately, do not possess gardens. To such persons I can earnestly recommend the use of tools and joiner-work; the patient may, at a little expense, provide himself with a little workshop and a set of tools, and he will be likely to take a lively interest in the fabrication of objects which with a little practice he can learn to make, and he will find his muscular forces greatly increased thereby; therefore I would say to diabetic patients, if you have any natural mechanical ingenuity, apply yourselves to these healthful tasks.

Such are the principal applications of gymnastics to the treatment of diseases. In the next lecture I shall take up a subject which has many points in common with gymnastics, namely, massage.

*THE INFLUENCE OF ANTIFEBRIN, SALICYLIC ACID, AND CARBOLIC ACID
ON NORMAL AND ABNORMAL
BODILY TEMPERATURE.*

BY H. A. HARE, M.D. (UNIV. OF PA.).*

(Continued from page 389.)

II. SALICYLIC ACID.

IN ten experiments as to the influence of salicylic acid on the normal rectal temperature of the rabbit, the following results were

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obtained: In six experiments there was quite a marked fall of bodily temperature. In two others it rose slightly, while in the remaining two there was no change of any moment whatsoever. The writer is unable to give any explanation of these somewhat varying results, although one of them may be possibly explained by the struggling which took place when the animal was picked up. It may be, too, that in the remaining experiments the drug failed to reach the general system owing to delayed absorption, since, although an endeavor was made to place the hypodermic needle in the same region in each animal, it is perfectly possible that in one or two instances the drug may have entered in a spot where absorption went on slowly. That the drug does reduce normal bodily temperature seems proven not only by the majority of these experiments, but also by the results which were obtained in the experiments on the circulation and temperature in the dog. Thus we find on looking at the charts that in all five experiments on the normal animal when attached to the manometer there was a very marked fall in the temperature of the body.

These results are directly opposed to those obtained by Prof. Sée* and Fürbringer,† the first of whom used enormous doses, as much as 150 grains for a man, without finding any change in his temperature.

Prof. Sée gave the drug by the stomach, and, as Kohler has proved that the same investigator's experiments on the action of this drug on the circulation were made before the drug was absorbed, the same fallacy may exist here.

Gedl,‡ who gave man doses varying from 46 to 78 grains, found that in two cases there was no result, in three a lessening in the daily alterations in temperature, in three a slight fall of temperature, and in one a decided fall of 0.8° C.

Danilewsky states that the effects of the drug are slight and inconstant, while Mr. North§ found that the acid prevented very powerfully the rise of temperature following severe exercise.

Notwithstanding the somewhat contradictory results obtained by these experiments, I think the bulk of evidence points to a reduction of normal temperature under the influence of this drug, and that there is no doubt but that salicylic acid in very large doses decreases temperature very greatly.

I report the following experiments in detail:

Experiment 1.—Rabbit; weight, 2 pounds. Black doe.

Time. P.M.	Drug.	Rec. temp.	Remarks.
12.25	102½°	
12.30	1 gr.	.....
12.55	102°	
1.15	101½°	Animal huddles closely to the other, and apparently feels cold.
1.35	102°	
1.55	101½°	
2.15	102°	
2.35	102½°	
3.35	102½°	Fall of temperature = 1½° F.

Experiment 2.—Rabbit; weight, 2 pounds. White doe.

Time. P.M.	Drug.	Rec. temp.	Remarks.
3.40	103½°	
3.45	1 gr.	.....	Quiet.
4.05	103°	
4.25	102°	
5.25	101½°	
5.45	102½°	
6.05	103½°	
6.25	103½°	
6.45	103½°	Fall of temperature 2½° F.

Passing on to a consideration of the action of this acid on the circulation under normal conditions and in fever (ten experiments), we find that there seems to exist no relationship between arterial pressure and the temperature, and that under both conditions the drug causes a rise rather than a fall of pressure. On the abnormal or pyretic temperature salicylic acid in moderate or small doses seems to possess but little influence. Other observers, whose observations have been chiefly confined to the bedside, report that the drug has antipyretic powers, although even its most vehement supporters do not claim that it is very reliable as an antipyretic.

* *Bulletin de l'Acad. de Mtd.*, 1877, p. 697.

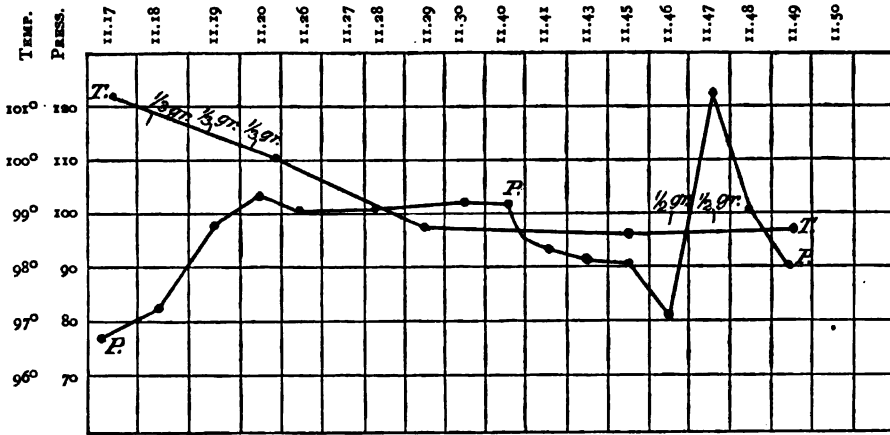
† *Zur Wirkung des Salicylsäure*. Jena, 1875.

‡ *Centralblatt f. Med. Wissensch.*, 1876, p. 403.

§ *Practitioner*, xxiii. 184.

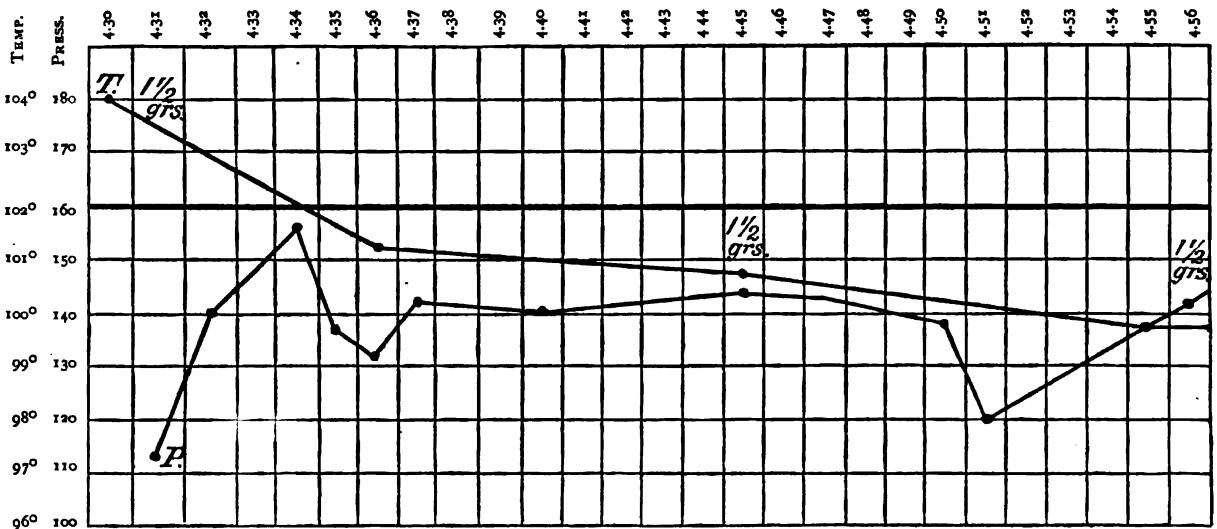
*Charts showing Arterial Pressure and its Relationship to Temperature, also showing Fall of Temperature produced by Salicylic Acid.**

Experiment 3.—Rabbit ; weight, 3 pounds.



Experiment 4.—Dog ; weight, 12½ pounds.

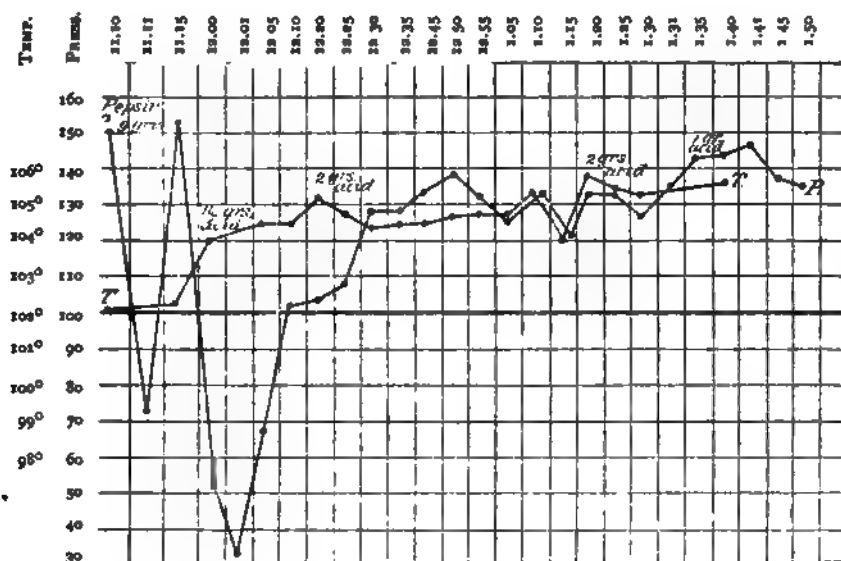
With Fever.



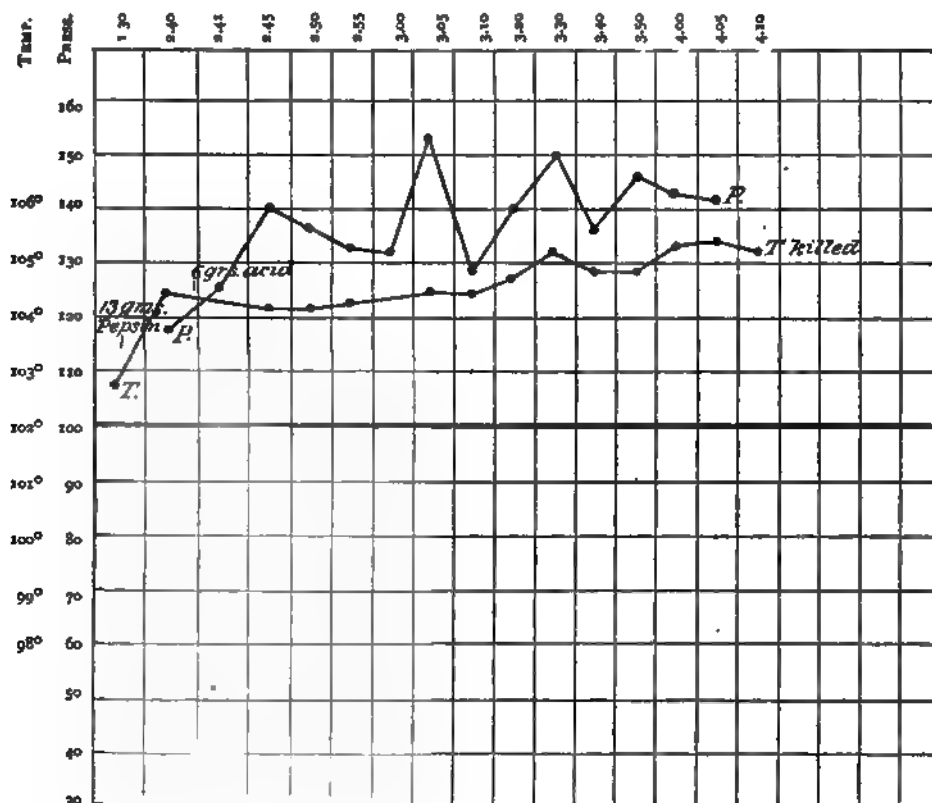
* It is proper to state that the details of many of the experiments have been left out owing to lack of space, not only in this portion of the paper but in the other portions also. In all, ninety experiments were performed, thirty on each drug.

Charts showing Arterial Pressure and its Relationship to Temperature, also showing Fall of Temperature produced by Salicylic Acid (Continued).

Experiment 5.—Dog; weight, 15 pounds.

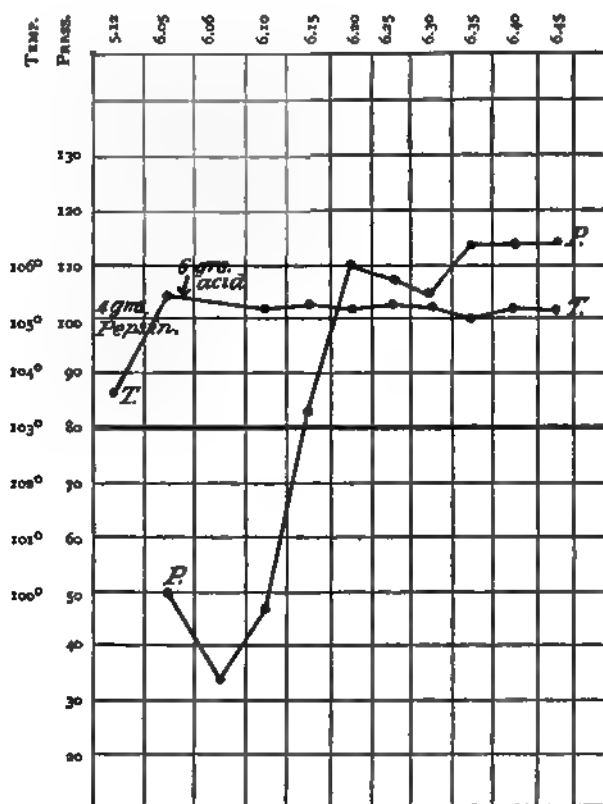


Experiment 6.—Dog; weight, 17 pounds.



Charts showing Arterial Pressure and its Relationship to Temperature, also showing Fall of Temperature produced by Salicylic Acid (Continued).

Experiment 7.—Dog; weight, 32 pounds.



The study of the action of this drug on the production and dissipation of heat is the most interesting portion of its investigation, and a somewhat minute analysis of the results is therefore not out of place.

We find that in two experiments there was a *gain* of both dissipation and production, and that in the first of these the two functions balanced each other, while the second (No. 9) dissipation was very markedly increased over production.

In two other experiments there was a loss or decrease of both functions (Nos. 10 and 11).

In No. 10 dissipation was decreased more than was production, while in No. 11 heat production was decreased more than dissipation.

In No. 12 there was loss of dissipation and gain of production.

It will be seen, therefore, that the results obtained as to the method by which normal

temperature is decreased are not concordant, but from the first four experiments it seems evident that the drug acts on both functions in reducing normal temperature.

Experiment 8.—Dog; weight, 20 pounds.

Time. A.M.	Rec. temp.	Box temp.
11.00	104.7°	55.20°
12.00	.....	56.00°
1.00	104.6°	57.20°
	.1°	2.00°
1.15	4 grs. of salicylic acid into jugular.	
1.20	104.7°	57.05°
2.20	.....	.....
3.20	104.6°	59.10°
	.1°	2.05°

Hourly dissipation of bodily heat..... 122.000

Hourly production of bodily heat..... 121.250

Hourly dissipation of heat after drug..... 125.050

Hourly production of heat after drug..... 124.300

SUMMARY.

Hourly dissipation of heat before drug.....	122.000
Hourly dissipation of heat after drug.....	125.050

Hourly gain* of dissipation..... 3.050

Hourly production of heat before drug.....	121.250
Hourly production of heat after drug.....	124.300

Hourly gain* of production 3.050

Experiment 9.—Dog ; weight, 16 pounds.

Time. A.M.	Rec. temp.	Box temp.
11.00	103.0°	57.60°
12.00	.....	.....
1.00	103.3°	58.90°
	.3°	1.30°
1.20	6 grs. of salicylic acid into jugular.	
1.30	104.3°	58.85°
2.30	.....	.....
3.30	103.7°	60.25°
	.6°	1.40°

Hourly dissipation of bodily heat.....	79.300
Hourly production of bodily heat.....	81.100
Hourly dissipation of bodily heat after drug.....	85.400
Hourly production of heat after drug.....	81.800

SUMMARY.

Hourly dissipation of heat before drug.....	79.300
Hourly dissipation of heat after drug.....	85.400

Hourly gain of dissipation..... 6.100

Hourly production of heat before drug.....	81.100
Hourly production of heat after drug.....	81.800

Hourly gain of production..... .700

Experiment 10.—Dog ; weight, 24 pounds.

Time. A.M.	Rec. temp.	Box temp.
10.55	103.7°	59.60°
11.55	.....	60.60°
12.55	103.4°	61.25°
	.3°	1.65°
1.15	8 grs. of salicylic acid into jugular.	
1.25	103.7°	61.05°
2.25	.....	.....
3.25	103.6°	62.05°
	.1°	1.00°

Hourly dissipation of bodily heat.....	100.650
Hourly production of bodily heat.....	97.950
Hourly dissipation after drug.....	61.000
Hourly production after drug.....	60.100

SUMMARY.

Hourly dissipation before drug.....	100.650
Hourly dissipation after drug.....	61.000

Hourly loss† of dissipation..... 39.650

* The word "gain" is used here as synonymous with increase.

† The word "loss" is used as synonymous with decrease.

Hourly production before drug.....	97.950
Hourly production after drug.....	60.100

Hourly loss† of production..... 37.850

Experiment 11.—Dog ; weight, 23 pounds.

Time. A.M.	Rec. temp.	Box temp.
11.30	102.7°	58.45°
12.30	.....	59.95°
1.30	103.7°	61.10°
	1.0°	2.65°
1.40	8 grs. salicylic acid into jugular.	
1.55	103.0°	61°
2.55	.....	...
3.55	103.4°	63°
	.4°	2°

Hourly dissipation of bodily heat.....	161.650
Hourly production of bodily heat.....	170.275
Hourly dissipation of heat after drug.....	122.000
Hourly production of heat after drug.....	123.100

SUMMARY.

Hourly dissipation before drug.....	161.650
Hourly dissipation after drug.....	122.000

Hourly loss of dissipation after drug..... 39.650

Hourly production of heat before drug.....	170.275
Hourly production of heat after drug.....	123.100

Hourly loss of production after drug.... 47.175

Experiment 12.—Dog ; weight, 35 pounds.

Time. A.M.	Rec. temp.	Box temp.
10.10	104.7°	61.95°
11.10	.....	.....
12.10	104.1°	66.05°
	.6°	4.1°
12.28	8 grs. of salicylic acid into jugular.	
12.35	104.1°	65.95°
1.35	.....	.....
2.35	104.7°	69.90°
	.6°	3.95°

Hourly dissipation of bodily heat.....	250.100
Hourly production of bodily heat.....	242.225
Hourly dissipation of heat after drug.....	240.950
Hourly production of heat after drug.....	248.825

SUMMARY.

Hourly dissipation of heat before drug.....	250.100
Hourly dissipation of heat after drug.....	240.950

Hourly loss of heat dissipation after drug. 9.150

Hourly production of heat before drug.....	242.225
Hourly production of heat after drug.....	248.825

Hourly gain of heat production after drug. 6.600

On analyzing the calorimetrical observations during fever we find that in one instance

† The word "loss" is used as synonymous with decrease.

(No. 13) we have a gain of both functions, but that dissipation being increased more than was production, temperature was decreased thereby. In No. 14 both functions were decreased, but that production was decreased far more than was dissipation, thereby permitting a fall of temperature.

Again, in No. 15 dissipation was not influenced, while production was decreased.

In No. 16 there was loss of both functions, dissipation being more decreased than production.

In No. 17 the same condition of affairs also held.

These results are much more discordant than those obtained on normal temperature, and agree with the experiments already given, showing that the drug does not have any positive power over fever.

Thus, in one instance, the fall of temperature depended on increased dissipation, and in two others on decreased production, while in the remaining experiments there was a rise in temperature due to a greater failure of dissipation than production.

Experiment 13.—Dog; weight, 12 pounds.

3.45 Rec. temp. 105°. Gave 1 grm. pepsin into jugular.

Time. A.M.	Rec. temp.	Box temp.
4.20	105.8°	66.30°
5.20	107.9°	66.50°
	2.1°	.20°
5.22	5 grs. salicylic acid into jugular.	
5.25	107.5°	66.30°
6.25	105.8°	66.80°
	1.7°	.50°

Hourly dissipation of heat before acid 24.400
 Hourly production of heat before acid 43.300
 Hourly dissipation of heat after acid 61.000
 Hourly production of heat after acid 45.700

SUMMARY.

Hourly dissipation of heat before drug 24.400
 Hourly dissipation of heat after drug 61.000
 Hourly gain of dissipation after drug 36.600
 Hourly production of heat before drug 43.300
 Hourly production of heat after drug 45.700
 Hourly gain of production after drug 2.400

Result.—Gain of both dissipation and production, the dissipation being increased the more.

Experiment 14.—Dog; weight, 24½ pounds.

10.30 Rec. temp. 103°. Injected 3 grms. filtered pepsin.

Time. A.M.	Rec. temp.	Box temp.
11.10	103.7°	61.15°
12.10	105.3°	62.45°
	1.6°	1.30°
12.25	Injected 6 grs. salicylic acid into jugular.	
12.30	105.0°	62.35°
1.30	105.2°	63.50°
	.2°	1.15°

Hourly dissipation of heat 158.600
 Hourly production of heat 188.300
 Hourly dissipation after drug 130.300
 Hourly production after drug 133.670

SUMMARY.

Hourly dissipation of heat before drug 158.600
 Hourly dissipation of heat after drug 130.300
 Hourly loss of dissipation after drug 28.300
 Hourly production of heat before drug 188.300
 Hourly production of heat after drug 133.670

Hourly loss of production after drug 54.630

Result.—Loss of both functions, production being very markedly lessened.

Experiment 15.—Dog; weight, 12 pounds.

12.40 Rec. temp. 104.2°. Injected 3 grms. pepsin.

Time. P.M.	Rec. temp.	Box temp.
1.35	107.15°	63.35°
2.35	107.80°	63.70°
	.65°	.35°
2.37	6 grs. salicylic acid into jugular.	
2.40	106.70°	63.45°
3.40	107.10°	63.80°
	.40°	.35°

Hourly dissipation of heat 42.700
 Hourly production of heat 48.550
 Hourly dissipation after drug 42.700
 Hourly production after drug 46.300

SUMMARY.

Hourly dissipation before drug 42.700
 Hourly dissipation after drug 42.700

Hourly dissipation after drug unchanged.

Hourly production of heat before drug 48.550
 Hourly production of heat after drug 46.300

Hourly loss of production after drug 2.250

Result.—Loss of production. Dissipation not affected.

Experiment 16.—Dog; weight, 22½ pounds.

Time. P.M.	Rec. temp.	Box temp.
3.45	104.5°	63.55°
4.45	104.8°	64.55°
	.3°	1.00°
4.47	Injected 6 grs. salicylic acid.	
4.50	104.5°	64.00°
5.50	104.9°	64.85°
	.4°	.85°

Hourly dissipation of heat.....	122.0000
Hourly production of heat.....	127.1625
Hourly dissipation after drug	103.7000
Hourly production after drug	110.4500

SUMMARY.

Hourly dissipation before drug.....	122.000
Hourly dissipation after drug.....	103.700

Hourly loss of dissipation after drug... 17.300

Hourly production of heat before drug.....	127.1625
Hourly production of heat after drug	110.4500

Hourly loss of production after drug... 16.7125

Result.—Loss of both. Greater loss of the two is in dissipation.

Experiment 17.—Dog; weight, 19½ pounds.

10.15 Rec. temp. 103.7°. Injected 3 grms. of pepsin filtered.

Time. A.M.	Rec. temp.	Box temp.
11.00	104.7°	62.45°
12.00	104.6°	63.40°
	.1°	.95°
12.02	6 grs. salicylic acid into jugular.	
12.15	103.7°	63.25°
1.15	104.7°	64.00°
	1.0°	.75°

Hourly dissipation of heat	115.900
Hourly production of heat	114.438
Hourly dissipation of heat after drug.....	91.500
Hourly production of heat after drug.....	106.125

SUMMARY.

Hourly dissipation of heat before drug.....	115.900
Hourly dissipation of heat after drug.....	91.500

Hourly loss of dissipation after drug.... 24.400

Hourly production of heat before drug.....	114.438
Hourly production of heat after drug.....	106.125

Hourly loss of production after drug 8.313

Result.—Loss of dissipation and production, the loss of dissipation being the greater.

A SUMMARY OF THE ACTION OF SALICYLIC ACID ON BODILY TEMPERATURE.

1. *Salicylic acid* has the power to reduce slightly normal bodily heat.

2. *Salicylic acid*, according to the writer's experiments, has but little power over pyretic temperature.

3. *Salicylic acid*, when acting on either normal or abnormal temperature, does not seem to have much influence on the circulation either in regard to pulse-rate or arterial pressure. Any change, when it occurs, seems to be an increase of arterial pressure rather than a decrease, and this increase occurred more markedly in the normal than in the pyretic animal.

4. *Salicylic acid*, in reducing normal tem-

perature, probably acts on both functions, namely, production and dissipation, while it seems to act very uncertainly and irregularly when reducing high temperature, failing frequently, as before stated, to prevent an increase of bodily heat.

(To be continued.)

CROUPOUS PNEUMONIA OF THE APEX ATTENDED BY A UNIQUE SYMPTOM.

BY LOUIS STARR, M.D.*

THOUGH the histories of isolated cases are, as a rule, unread, and therefore useless, I cannot but believe that the following details of a case of apical pneumonia will be of interest to all students of pediatrics, as they present a symptom that has certainly never occurred before in my somewhat extended experience with this peculiar form of pneumonitis, and which, so far as I know, has never been recorded.

Percy P., a well-nourished English boy of 4 years, was admitted to my wards in the Children's Hospital on April 15, 1887. There was no history of tuberculosis, and, with the exception of an attack of scarlatina sixteen months before, the child had enjoyed perfect health. On the day before admission he was at school, though while there he was in a febrile state and drank freely of water, afterwards vomiting and complaining of pain in his head. That night he was restless and feverish, and had short and rapid breathing, the expiratory movement being attended by a grunt or complaint of pain.

When first seen the little patient's condition was as follows: face drowsy in expression, a slight herpetic eruption on lips, and a bright circumscribed flush on the right cheek; decubitus right lateral, with the head markedly retracted, the neck stiff, the spine arched forward, the arms pressed close to the sides and folded across the chest, the thighs drawn up towards the abdomen, the legs flexed on the thighs and the feet crossed,—a decided *en chien de fusil* position in fact; tongue heavily coated, breath offensive, no vomiting, bowels active, and abdomen rather distended; respiration 40 per minute, with active nostrils, grunting expiration, and frequent hacking cough; pulse 140, regular and quick; skin dry; axillary temperature 104° F.; no *tache cérébrale* nor hyperæsthesia; urine scanty and

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heavy with lithates ; cerebral activity blunted, but patient readily roused ; well-marked physical signs of consolidation of the upper lobe of the right lung.

The subsequent course of the case can be seen at a glance from the subjoined table :

Day of disease.	Temperature.		Pulse.		Respiration.		Movements of bowels.
	M.	E.	M.	E.	M.	E.	
2	104 ⁰	104 ⁰	.....	140	...	40	
3	101*	103.2	110	142	25	50	1
4	103.8	104	140	126	42	48	2
5	103.2	103	146	138	44	50	2
6	103.8	104	122	138	40	40	2
7	103.8	102.8	118	130	44	50	2
8	103.2	103.6	142	126	50	50	4
9	101.2	103	136	130	50	50	2
10	100.4	100	132	106	40	38	1
11	97.2	99	100	124	32	30	4
12	97.8	98.4	100	100	32	28	4
13	98.4	98.2	120	88	28	30	3
14†	98	98	100	86	24	26	3

* Can only account for this fall by shock consequent upon the long journey to hospital.

† Convalescence thoroughly established.

The peculiar decubitus,—the special feature of the case,—together with the other general symptoms, continued unchanged in character throughout the illness, and the former did not diminish until the temperature began to fall on the ninth day, and did not disappear entirely until the temperature settled to the normal line on the fourteenth day.

The treatment consisted of a liquid diet,—milk and beef-tea in small quantities at short intervals,—quinine (by suppository) and whiskey to maintain the general vigor, digitalis to slow and strengthen the action of the heart, counter-irritation, and a cotton jacket over the right lung. Bromide of potassium was administered in small but repeated doses for several days during the height of the attack, on account of the marked cervico-spinal rigidity, and carbonate of ammonium at the end to aid in stimulating the heart.

In ordinary cases of cerebral pneumonia there is little to draw attention to the lungs. In place of flushed cheeks, active nostrils, rapid breathing, frequent hacking cough, and high fever, the face is pale, the nares passive, the cough slight or absent, the breathing quiet, and the fever moderate in degree. On the other hand there are vertigo, muscular twitchings, and marked and persisting drowsiness sometimes approaching stupor ; all pointing to cerebral disease. Without care a mistake is easy. Suspicion is first excited by noting the absence of certain prominent features of tubercular meningitis. Thus there is no history of an insidious and protracted

prodromal period, no obstinate vomiting nor constipation, no retraction of the abdomen, no slowing of the pulse, no irregular, sighing respiration, no *tache cérébrale*, no squinting or irregularity of the pupils, and no absolute unconsciousness. Should these points strike the observer, and he remember that there is such a disease as cerebral pneumonia, an examination of the chest will follow and the key to a diagnosis be found.

In the case I have reported there were quite enough symptoms to at once direct examination to the lungs, at the same time the drowsiness of cerebral pneumonia and the peculiar decubitus of tubercular meningitis were prominent. Having examined the lungs little difficulty was experienced in reaching a conclusion, proved to be correct by the subsequent course of the disease. This, then, was an easy case, but it is none the less instructive. It carries a warning that may save future anxiety and delay, and prevent the embarrassment of a mistake.

ACUTE CEREBRO-SPINAL MENINGITIS.

By JOSEPH X. ZITKE, M.D., BATESVILLE, IND.

IT is a fact well known to the general profession that in the course of years—sometimes after a lapse of half a century—there are seasons in which cerebro-spinal meningitis appears suddenly and unexpectedly even in the farthest districts from large cities in an epidemic form, spreading rapidly over a certain district of the territory, and after a stay of some weeks or months disappears again as suddenly as it had come in.

During the last twelve years of my practice I had occasion to observe three such epidemics of this dreadful disease, and I must confess that the mortality of two of them was rather more than distressing to me to contemplate. The last one was, perhaps, not of the most virulent type, hence, perhaps, the more satisfactory results observed and obtained.

Besides this form of cerebro-spinal meningitis, there appears, also, another one (a less independent form), complicating other diseases, and thus lessening the at best dubious chances of recovery. It is this latter form of the disease that seems to me to have caused a considerable confusion in the pathology of the disease, for many of the best authors seem to consider meningitis as the

primary, and the accompanying disease as the secondary, pathological state of the body, whilst other writers, and perhaps the more profound thinkers of the profession, consider meningitis as a secondary pathological process following in the wake of another one,—the primary.

This question, however unimportant it may seem, has nevertheless a great significance and importance in general practice, to which I shall return again when considering the etiology and nature of cerebro-spinal meningitis.

That cerebro-spinal meningitis is by no means one of the new diseases of the nineteenth century, as some of our medical authorities would try to convince us, can be easily proven by the study of ancient medical records, and by the symptomatological history of the many epidemics which devastated Europe during the latter period of the middle ages and during the first centuries of the new era. Thus, if we consider the most important symptoms of the historically recorded plagues of the past centuries, we shall find it specially mentioned by Simon de Lovicka, "De preservatione a pestilentia," vol. i. pars i., folio edition. Pragensis, 1537.

Other authors of those years give the same symptoms of the fatal plague which scourged Europe so dreadfully in those times. Another but very little differing account can be found in the work of the same author, entitled "Enchiridion Medicinæ," Krakau edition, 1537.

Johanes Agricola gives the history of the pest in a work entitled "Historia Pestis Nigræ," which was published in Prague in 1535, at which time the university had the greatest reputation as to medical studies. Soon after the work of Master Agricola, another professor of the same university published a book on the same subject. It was Magister Udalricus Leonorus a Cauba (1535), a graduate of Padua, who opposed quite earnestly all *blood-letting and violent administration of salts* in the disease, and advised chiefly rest and "regimen corroborans naturam debilitatam." He also compounded a bolus, which he called "bolus pestilentiae," and which he prescribed to some noble lord, and vouched for its action as "qui operat sedative, dolorem mitigat, somnum excitat, et sic per quietem cerebri totum corpus sanatur." (How is that for 1535?) He seems to have been a rather stout man of considerable adipose tissue, and both his success in treating the plague and his colossal, fat figure gave origin to the following couplet:

"Tam desperanti devit hanc*—Leonorus nicrete
Excellens medica—corpore crassus homo."

From which it is evident that even in the sixteenth century professional reputation was considerably united with the exterior of the doctor.

Another writer on the same subject is Petrus Andreas Mathioli (1552), an Italian, a graduate of Padua, Paris, and Prague, who wrote the celebrated work "Epistolarum Medicinalium libri quinque" (Pragæ, 1561), which work was later translated both into German and Bohemian, though it met with a great opposition at first from the medical faculty of the university, chiefly on account of the author's opposition to blood-letting and salts in the plague, which latter disease he calls "morbus maculatus," or for the first time, "pestilentia cerebri maculata nigra."

It would be too long and too tedious if I should try to introduce here even the names of all the authors of the middle ages who wrote about the celebrated plagues of Germany, Italy, and England, however barren English literature may be on that subject. From their writings, however, and from the symptoms enumerated and so clearly stated, we can hardly doubt that the celebrated plagues of the middle ages and the pestilent, acute, and malignant form of cerebro-spinal meningitis, if not the same disease, were surely very consanguineous, and of a very near and true relationship.

Thus the well-known pestilence which followed the bloody, ambitious war of Charles V., of Germany, and Francis I., of France, had so many characteristic symptoms of our cerebro-spinal meningitis, that it is very hard to doubt their identity of nature. Though very little is said about this renowned plague in the works of Master Ambrosius Parré, or in those of Magister Amboise, yet an old volume which for many years was preserved in the monastic libraries of Ossegg, and which was attributed to the celebrated perfumer, astrologer, and poisoner of Queen Catharine de Medici, Renée, the Florentine, gave such accurate descriptions of the symptoms of the pestilence that they hardly differ from those given by other writers of more professional character and respectability, and thus indirectly confirm, which directly to do they should perhaps never be called on.

The further progress of the cerebro-spinal meningitis during the last two centuries all over the world is ably traced in Pepper's

* Sanitatem.

"System of Medicine," under the head of "Cerebro-Spinal Meningitis" (vol. i.). The name by which this special disease was designated was widely differing in the various countries.

Thus we find it called "pestis," "pestis nigra," "febris maculata," "pestis maculata cerebri celer," "febris maculata nigra," "la febre convulsiva," "febbre soporosa," "fièvre satanique," "fièvre maculée." The popular name in England and United States was the "spotted fever," which name is even now used by the people, though every educated physician should avoid it, because it expresses by no means the meaning of "cerebro-spinal meningitis." For, if we consider the multitude of diseases which terminate with a cutaneous purpuric and hemorrhagic eruption of the skin, it would be very difficult for us to form a definite idea from such an indefinite and general nomenclature of a pathological state as is expressed by the words "spotted fever." The German and Slavonic popular term—das "steifneckfieber"—is far more better chosen, and gives a more clear idea of "cerebro-spinal meningitis," because it recalls at once to the mind the most characteristic symptom of the disease, and that of such an importance to the physician that in many cases of doubtful nature where no positive diagnosis has been or could be made, this essential symptom settled the diagnosis of cerebro-spinal meningitis.

As to the etiology of cerebro-spinal meningitis but little can be said. It appears that in all countries can be found its field of "deadly action;" that it can be traced far in the north and deep to the south. However, it is mostly at home in a warm climate. That it is not caused by uncleanness is proved by its appearance in the houses of the rich as well as of the poor, and perhaps more among the better class of mankind. Another characteristic proof seems to be in the fact that cerebro-spinal meningitis has not yet visited Russia and Poland. Whether a micrococcus or bacillus, introduced in some way into the animal economy, is its cause is till now not determined. But, if we consider the fact that so many diseases are now charged to the general bill of these microscopic organisms, we can hardly deny the general possibility.

The persons mostly affected by the disease are young children, and persons from thirty to thirty-five years of age. Males seem to have more affinity for the disease. This latter fact was so well known to the medical men of the middle ages that Archbishop Albicus, for-

merly the dean of the medical faculty of Prague and the body physician of the Emperor Charles IV., says, in his work "De Pesti Maculata Nigra," "Mares ab ipsa afficiuntur plus quam feminae, et mortalitas major est in genere masculino, quam in feminino."

Some of our later observers, chiefly of French origin, try to establish among the causes of the disease homesickness, excesses in Baccho et Venere, sudden changes of temperature, dry and wet seasons following in quick succession, sudden mental shock, and finally violent mental emotion.

It is hard to form a definite opinion where so many various states contend with each other for acceptance, but if we consider the fact that the greater number of victims of cerebro-spinal meningitis are young children, and boys and girls hardly yet arrived at the age of puberty, we can surely eliminate from the above-named list the excesses in Baccho et Venere, as well as the sudden mental shocks and mental emotions.

As to the disease itself, after years of study, it is finally determined that it is *not contagious*. The forms of cerebro-spinal meningitis, as observed on the sick-bed, are various, hence many medical writers made so many distinctions and contra-distinctions among the different types of the disease that they are very apt more to confuse the student than to instruct him. The whole divisions and classification of the various types of cerebro-spinal meningitis may be found in Pepper's "System of Medicine" in all its fulness, and may be very interesting reading for the experienced physician, but by no means the proper food for the mind of the young student or physician, whose mind has not yet in its possession a clear and firm picture of the general character of cerebro-spinal meningitis.

For this reason I prefer the simple division of Niemeyer, who recognizes but *one form* of acute cerebro-spinal meningitis, subject, however, to changes and modifications of its symptoms according to the virulence and acuteness of the disease itself and the psychological and physiological qualities and status of the patient. Retaining thus these two chief points in view, and submitting to our consideration all the changes which an inflammatory, acute process does and must produce in various persons of various temperaments, ages, nutrition, and development; also considering now one, now another of the pathologically important and characteristic symptoms which may become prominent, we shall easily form for ourselves all the various types

of cerebro-spinal meningitis that fill our text-books and mislead the beginner, and see them for ourselves without any didactic teaching, and without any following confusion and the consequent uncertainty and doubt.

Some other existing forms of cerebro-spinal meningitis are mostly not of primary origin, but of secondary nature. Such cases are usually observed as following in consequence of pneumonia or pleurisy, exanthematic fevers or other infectious diseases, the most important of which are Bright's disease and typhoid fever.

Another class of the same disease is also observed as produced mostly by physical forces, as blows on the head, falls from an elevation, etc. It seems also that exposure to the hot rays of the sun can produce cerebro-spinal meningitis.

Finally, the last class of this secondary origin is the cerebro-spinal meningitis called forth by syphilis, which is clearly described in Ziemssen's "Handbook."

The epidemic appearance of cerebro-spinal meningitis in large barracks and penitentiaries seems to be a kind of blood-poisoning, the specific nature of which is not yet well determined.

Symptoms, Prognosis, and Treatment.—Cerebro-spinal meningitis is one of those diseases that attack a human being often suddenly and without any *stadium prodromorum*. A child, a boy or girl, may appear quite healthy at supper-time, may not complain at all, or its appetite may be not quite to the normal, when suddenly near or after midnight the whole household is awakened from sleep by its complaints of a violent headache. The face is flushed, the eyes bright, the pupil dilated. The child moans continually, interrupting the moaning by violent screams, which are heard all over the house. These screams, which, at the beginning, may be heard but at long intervals, become more and more frequent, the patient becomes restless, throws his hands, his feet, his whole body all over the bed. All the body is in motion except the head, which usually is kept at rest. By and by convulsions set in, which terminate by a comatose condition, which is interrupted by low, meaningless, plaintive moaning, and which usually ends in death after a lapse of from forty-eight hours to five or six days. At the same time the stomach is usually deranged, frequent vomitings set in, which, by the violent strain and by the increased hyperæmia of the cerebral blood-vessels, still further augment the pain, and thereby make

the patient often appear as dead or nearly dying.

The bowels are usually constipated, but I have seen cases in which they have been very loose, and by this very symptom, and the tenderness in the abdominal region, and the great headache, might have led to a mistaken diagnosis if the thermometer had not shown us the right direction in which to travel in quest of the true one.

The temperature is usually in no proportion to the violence of the general symptoms, and seldom reaches 102°. The pulse is usually slow, and very seldom over 110 beats in a minute. The tongue is covered with a whitish or light yellow fur, while the lips bear evidence of the existence of a herpes labialis. In some cases a roseola eruption may be observed on the chest and abdomen. The thirst is usually great, yet, as soon as a drop of water has reached the stomach, the awful straining of vomitus sets in. Sometimes a slight strabismus may be observed in one or the other eye, sometimes in both. The same may be said of deafness, which occurs, in the majority of cases, at the same time as the strabismus has appeared. On the third, fourth, sometimes even not till the sixth day, the characteristic symptom of cerebro-spinal meningitis sets in,—i.e., the stiff neck, produced by the contraction of the long neck-muscles,—and thus removes all doubts, if any were existing, in respect to the correctness of the diagnosis.

The prognosis is always doubtful and serious, the termination usually fatal. Indeed, as long as the old treatment was strongly and unmercifully followed, with its bleeding, leeches, cantharides-plaster, etc., all used and applied as if man was made from a mass of immutable, never-changing, never-differing material, the general death-rate was appalling. Some twenty years ago, in an epidemic in Austria, of one hundred patients confined in the hospital for treatment, only three escaped with their lives. But in what a state! It had been, perhaps, better for them if they had followed the great caravan of their fellow-sufferers.

In fact, though science has furnished to our hands in these days better knowledge of the pathology of the disease and more suitable drugs for its resistance, it is yet true that the general mortality of cerebro-spinal meningitis is very great, and that the general state of health of the convalescent is far from being envied. Indeed, experience teaches that many of those convalescents remain afflicted for a

long time, if not for the whole term of their natural life, with one or another of the many diseases which have taken their origin from the destructive process of the inflammation of the meninges and consequent effusion into the arachnoid cavities. Thus, we find some suffering from a life-long photophobia, others from strabismus, from deafness, blindness, or from general or partial paralysis of some part. And, again, others, though the animal functions of their organisms seem not to have been deranged at all, lose all their mental abilities and capacities, become idiotic, demented, and even epileptic.

Such is the prognosis and course of cerebro-spinal meningitis. The convalescence is usually very slow, and requires just as careful medical attendance as the acute stage of the disease.

Treatment.—The general treatment of cerebro-spinal meningitis was till perhaps the last decade more or less antiphlogistic. Quantities of blood were taken, either by the lancet, the cup, or the leech. Even in our own days there are still some physicians who cannot treat cerebro-spinal meningitis but with a cup or a leech. The same may be said of the application of mustard-poultices to the neck, or of cantharides-plasters to the occiput. As for myself, I never found them beneficial. The counter-irritation which produced a more or less large blister had no beneficent effect on the disease itself, while the annoyance produced by the irritation was of harmful consequence to the patient. Further, nearly in all cases where cantharides were employed dysuria took place, and the patient underwent regular torments as often as he was obliged to urinate.

How far the use of drastic purgatives or large doses of salts are of benefit I cannot say, for I never employed them, as, considering the debilitating state of the febrile process itself, I did not consider them pathologically applicable to such cases.

Till the year 1879 I tried in many cases the above-mentioned treatment, complicating it with the use of cold or hot cloths on the head, and internal administration of quinine and other antipyretics. But I must say that the success that followed such a treatment was nearly *nil*.

It was in 1879 that cerebro-spinal meningitis raged in my neighborhood, and at one time I had about nine cases under treatment. They all were in one house, in a college, where they had been sent for education. The consulting physician was a man of the old

school, thoroughly addicted to the old antiphlogistic treatment, and nothing could convince him that it was wrong both in practice and theory.

At that time I was well acquainted with the fact that morphine, or any form of opium, was highly recommended in the disease, but the gentleman was obdurate and would not listen. The consequence was that eight of our patients died in a comatose condition between the fourth and sixth day of their illness. The ninth of the group was sick the second day at that time, and I had but very little hope that he would pull through. Fortunately, the old doctor became himself unwell, and could not come to see the patient, who from that time on remained entirely in my care. I changed the treatment immediately, stopped the nauseous mixtures of quinine, threw away the cantharides-plaster, and commenced a pure morphine treatment, with plenty of fluid nourishment and cold applications on the head.

The effect was soon visible to all. The patient grew quiet, slept for several hours, day and night, and finally recovered. This single successful case from nine was deeply interesting to me, and I determined to study the effect of morphine in cerebro-spinal meningitis more carefully at the very next opportunity.

This opportunity, however, did not come for many years, till it arrived in the month of January of this year. The case was as follows: S. H., aged 13, male, son of healthy parents, was taken sick one Sunday evening with pain in his head, vomiting, pain in his limbs, considerable tenderness in the hepatic and stomachic region. There was also constipation for two or three days. The conjunctiva slightly yellow, also the tongue covered with yellowish white fur; slight moist râles observed on the chest; no cough; temperature 100°; pulse 96 per minute; urine normal. A compound cathartic was administered, consisting of hydrarg. chlor. mit., jalap, ipecac, and colocynth, which was followed by two or three copious evacuations of dark greenish color and sickening smell. After these evacuations his head seemed a little relieved, and the vomiting was for a time arrested.

The following night, about two hours after midnight, the pain returned again with increased violence, and the frequent vomiting seemed to torment the boy to the utmost. External applications of menthol, camphor, Hoffman's anodyne were tried, but without any benefit. The face became flushed, the pupils dilated and sparkling, the hands and

feet burning hot and dry. About every twenty minutes he screamed from pain with such force that he was heard all over the house. The restlessness continued, and became more violent as time went on, the screams became more frequent, and he finally fell into convulsions, so that three men were necessary to hold him in bed.

As I had been but recently introduced into the family, I called a consultation, which ended in the application of an anal injection of hydrate of chloral. However, the effect of the drug was but of short duration, hence I proposed to make an injection of $\frac{1}{2}$ grain of sulph. morph. hypodermically. This was done, and soon afterwards the patient fell into a quiet sleep. Meanwhile, ice-cold applications were made on the head day and night. Till that time no positive diagnosis was made, yet my experience from the previous cases mentioned inclined me very much to suspect either an encephalitis or cerebro-spinal meningitis.

During the whole time the pulse was hardly more than 90, the temperature 100° or 101° .

On the night of the third to the fourth day the patient was very restless, so that several injections were necessary to keep him quiet. On the same day the characteristic sign of cerebro-spinal meningitis appeared, and my previous suspicions were confirmed.

As soon as the diagnosis was established I determined to rely exclusively on morphine, if no extraordinary circumstances should call for other treatment. As the vomiting still continued, the drug was given hypodermically, and rectal alimentation begun. Every three hours an injection was made in the stomachic region, and every four hours a two-ounce syringe filled with Carnrick's beef peptonoids injected into the rectum.

The following observations were made at that time (January 26):

Time.	Temperature.	Pulse.	Note.
12 M. injection.	101°	96	Restless.
12½ P.M.	$99\frac{1}{10}^{\circ}$	90	Quiet; sleeping.
2 P.M.	$99\frac{1}{10}^{\circ}$	89	Little moaning.
2½ P.M.	$99\frac{1}{10}^{\circ}$	91	Little restless.
2¾ P.M.	$100\frac{1}{10}^{\circ}$	97	Very restless; moaning.
3 P.M. injection.	101°	100	Very restless; moaning.
3½ P.M.	$99\frac{1}{10}^{\circ}$	90	Quiet; not entirely.
4 P.M.	99°	88	Very quiet; sleeping.
5 P.M.	$99\frac{1}{10}^{\circ}$	88	Quiet.
5½ P.M.	$99\frac{1}{10}^{\circ}$	92	Restless.
5¾ P.M.	$100\frac{1}{10}^{\circ}$	94	Very restless.
6 P.M. injection.	$100\frac{1}{10}^{\circ}$	98	Very restless.

This table shows how the morphine injections affected the patient. About one-half or three-quarters of an hour after the injection the boy became quiet, and when not sleeping he was able to understand every word that was spoken in the room. A clear example, or rather confirmation of this assertion, happened that very day. The Catholic priest, who had given him the sacraments, asked me in regard to the prognosis. As the parents of the boy were in the room, I answered him in Latin, to which the priest answered in the same language. He did not mind the boy, as we thought him asleep. In the evening some conversation was started, in which something was said about Latin. At once, quite unexpectedly to us all, the sick boy said, "The priest and the doctor spoke Latin this morning." This one fact speaks for the use of the drug as it was applied.

The treatment was continued in the same manner till the fifth day, when I determined to have the patient's head shaved, and applied a cap of oil-silk, after having had rubbed into the occipital region of his head a portion of a ten per cent. iodoform ointment.

The next few days the restlessness, which usually appeared about two and one-half hours after the injection of morphine, did not come till nearly three and one-half hours had passed. The vomiting was stopped also. Henceforth the drug was given by the mouth in a watery mixture, to which an equal quantity of caffeine was added. A teaspoonful was given every four hours.

The seventh day the time was prolonged to five hours, and on the eighth day none was given during daytime, and only one dose during night.

From that night real convalescence began.

Besides this case I had two more cases of the same disease, which, treated in the same way, ended also in convalescence.

Dr. Timermann, of Huntersville, had at the same time some cases on hand which were treated also with morphine, yet, as I hear that gelsemium and other drugs were used, I cannot say how much of the good effect was derived from the action of morphine and how much from gelsemium.

As for myself, I neither tried ergot nor gelsemium, but morphine alone, hence the result must be put to the account of that drug. The pathological anatomy of cerebro-spinal meningitis I omitted purposely, as being well known to every educated physician.

*A CASE OF CHANCROID SUCCESSFULLY
TREATED WITH MERCURY.*

BY C. L. DODGE, M.D., KINGSTON, N. Y.

I WAS consulted in April, 1886, by Mr. A. He had contracted a venereal ulcer a few days before, which was situated on the prepuce, and which I unhesitatingly pronounced a chancroid. I treated it in the usual way. First gave him a prescription of calomel and oxide of zinc, equal parts of each, to dust on the sore, with a small piece of lint to cover it, the foreskin then being drawn forward. This was continued for several days with no improvement, the sore, on the contrary, enlarging and becoming more painful. I then made a solution of iodoform in ether, and directed him to paint it carefully with a camel's-hair brush. This he tried for several days without any better result. I then told him if he would put up with the odor of iodoform I would give him some of the pure drug, which I felt confident would soon bring about a change for the better. Much to my surprise and the great annoyance of the patient, this seemed to have no better effect than the solution. After continuing for a reasonable time, I at last used a solution of nitrate of silver, twenty grains to the ounce, the ulcer meanwhile spreading and enlarging, and becoming more painful every day. After using the nitrate of silver for three days without any improvement whatever, it occurred to me that possibly I might have been mistaken in my diagnosis, and might have a true chancre to deal with. I then gave him 5 grains of hydrarg. cum creta three times a day. In less than a week the sore began to improve, and I congratulated him on the fine appearance it then presented, and told him he need not return for a few days to come, as it was doing so nicely. Two days later he met me on the street, and told me he had a sore mouth. Without stopping to inquire further, I at once took it for granted that it was owing to the use of the mercury; and I then told him to discontinue taking the powders, and gave him a prescription for a solution of chlorate of potassium as a mouth-wash. He returned in a few days, and told me that his mouth was all right, but the sore was almost as bad as ever. Upon inspection this proved to be true. I now carefully inquired as to the sore mouth, if there had been a bad taste, sore teeth, and an excessive flow of saliva. He then told me that none of these symptoms were present, but he had a broken back tooth,

which he thought had caused the trouble in the side of his cheek, and this proved to be the fact. He went to a dentist, had it properly treated, after which he had no more sore mouth. I now immediately resumed the mercury, and in a few days improvement was evident. The treatment was continued for three weeks, and at the end of that time the sore was completely healed, and gave no further trouble. I now supposed I had a case of syphilis, and had been mistaken in my diagnosis of chancroid. Here was a case presenting a single sore, with no induration of base, however, secretion quite profuse and purulent, and causing a good deal of pain. There were no enlarged ganglia at any time, as I took particular pains to determine positively. Now, this man has been under my observation from that time to the present,—fifteen months. I see him every day, and he has never had any of the secondary symptoms of syphilis, and is to-day a well man. Now, what was this case, chancre or chancroid? I am firmly convinced that it was chancroid. Bumstead* says, "In my own practice I have learned to regard the appearance of secondary symptoms between the fortieth and fiftieth day after the development of the chancre as almost certain, and I have never seen a case which was carefully watched in which they failed to show themselves within three months. Ricord's limit of 'six months' will certainly include the most extreme cases." If this had been a true chancre secondary symptoms ought certainly to have shown themselves long before this. No one would presume to say that he was *cured* of *syphilis* by 5-grain doses of mercury with chalk in three weeks, so I think I am warranted by the facts in affirming this to be a case of chancroid, as I first believed it to be. Now, mercury is said to be always useless and in most cases injurious in chancroid. Under treatment of chancroid Bumstead† says, "The internal use of mercury has no beneficial influence whatever upon the chancroid, which continues in a state of stubborn persistency, or even progresses, after the system is fully under the influence of this mineral. This statement is not a mere inference from the distinct nature of the chancroid and syphilis, but is founded upon experience. I was fully convinced of the fact by personal observation, and ceased to employ mercury for 'soft chancres' several years before the distinction between the two species was recognized. Since abandoning it in my own practice I have had

* "Venereal Diseases," p. 438. † Ibid., p. 365.

numerous opportunities of observing other surgeons administer mercurials for the chancre, and my former opinion has only been confirmed." Authorities are pretty well agreed as to the impropriety of administering mercury in the so-called "soft chancre." In this instance I was led to the use of it from a belief that it might be the true infecting sore, and well knowing the almost marvellous effect that mercury often has upon rebellious chancres, I prescribed it here. Believing this case to be unique, I have recorded it for what it may be worth.

POISONOUS SYMPTOMS FROM NITRO-GLYCERIN.

BY J. NOER, M.D., STOUGHTON, WIS.

ON November 14, 1886, I was called to see Mrs. O. S., age 47. I found her in bed, propped up with pillows into a semi-recumbent position. Face was very pale, and general appearance indicated great prostration and dejection; skin was cold, and covered with a clammy sweat. Breathing slow and heavy. Pulse tense, rather slow (50 to 65), and irregularly intermittent. For a short time it would intermit regularly every third beat, and then it would beat regularly for twenty to fifty beats, when the heart would suddenly stop for a second or two and then start again to repeat the irregular pulse as before. Temperature in the mouth was 99½° F. Pupils dilated, urine scanty, very dark in color, and passed with a great deal of pain and tenesmus at the neck of the bladder apparently. A hasty examination of the urine gave the following results: reaction neutral; sp. gr. 1030; large deposits of solids, principally urates and phosphates. Heller's test gave a very copious deposit of blood-pigments in a test-tube. Auscultation of the heart revealed a peculiar loud booming, seemingly distant, sound, synchronous with the ventricular systole, masking almost entirely the second sound of the heart, while the ventricular contraction appeared to be greatly prolonged. The area of the apex-beat was greatly increased, while the sounds in the aortic region were almost entirely inaudible.

The patient complained a great deal of the pain in the region of the heart, which she said was sharp and intense. There was intense headache, with hammering sensation in the temporal region, and a constricting band round the forehead. There was also great

weakness and muscular prostration. These symptoms, she stated, had been present for about three days.

I was at first unable to decide as to what to attribute these signs and symptoms; but finally I concluded that they must be due to the action of some poison. I soon ascertained that my patient was an old asthmatic, and that she had about three weeks previous to my visit consulted an eminent European physician, who was at that time sojourning in a neighboring city. After examining the mixtures which she was taking, and reflecting upon the symptoms that they had evidently caused, I concluded that nitro-glycerin might very probably be the offending ingredient. I directed the patient to take no more of my predecessor's medicines, and prescribed Tonquin musk, gr. vi, in suppositories, to be used every third hour; strychnine sulphate, gr. ⅓, four times a day; pot. iodide, gr. v, in solution after meals. In a few days patient expressed herself as quite recovered. Pulse was, however, intermittent, and urine contained traces of blood for over a week after my first visit.

Upon investigation I found that Mrs. S. had been taking the following mixtures for two weeks:

R Sol. nitro-glycerin. alcoholic., 30.
Sig.—Ten drops night and morning.

R Decoc. lichen. island., 25-250;
Pot. iodidi, 15;
Pulv. Doveri, 5. M.

Sig.—One tablespoonful after each meal.

R Fumigatoires pectorales (Français), 1 box.

It is evident that the nitro-glycerin solution was the cause of the trouble with Mrs. S. The directed dose of 10 drops had not been taken till a few days before I saw the patient, she having begun with a dose of 3 drops, and increased to 8 drops, which dose had been taken for some time. The 10-drop dose had been taken only a few times.

I think the physician may be open to criticism in this case, first, for prescribing a large and very uncertain dose (drops from a vial) of a dangerous, uncertain, and almost untried remedy to a patient that he never expected to see again; and, secondly, for not warning his patient of the danger. His dose is a very large one, and I believe the patient stated that she had been cautioned by the druggist.

New and dangerous therapeutic agents ought not to be used by travelling physicians nor by any physician who cannot see his patient frequently. I could in this case have helped my learned countryman into a very

disagreeable malpractice suit had I been so disposed. These can, however, bring nothing but disgrace to the medical profession, however much glory and cheap notoriety they may bring to the instigator.

*CARBOLIC ACID POISONING FROM THE
USE OF CARBOLATED COTTON
WITH A CHILD.*

DR. JULES SIMON reports the following case in *Revue Mensuelle des Maladies de l'Enfance*:

A little girl, aged 22 months, had a swelling of the submaxillary glands, for which tincture of iodine was applied, but, unfortunately, so strong that its escharotic effect was produced, and an ulcerated surface was formed. This was dressed with iodoform gauze and also carbolic acid wadding. Twenty-four hours after the first dressing the child was restless, complaining of pain in the head; the throat dry; the conjunctivæ injected; and coryza was present. The temperature was slightly raised, and the pulse very frequent.

The physician in attendance, fearing iodoform-poisoning, removed the iodoform gauze, but continued the carbolic dressing, and added borated cotton to the dressing.

Forty-eight hours after the first dressing the child was taken with uncontrollable emesis, prostration, and anuria; the carbolic acid dressing was then removed.

Great improvement followed in twelve hours, and in twenty-four hours the child was convalescent. The beginning of improvement was marked by the passage of a considerable quantity of urine almost black; the urine increased steadily in quantity, and became quickly normal. The fact that the urine gave no reaction for iodine showed that the poisoning was not due to that agent, while all the symptoms pointed to carbolic acid as the toxic agent.

CALCIUM GUMMOPHOSPHATE.

The administration of compounds such as those known under the names "lactophosphate," "chlorhydrophosphate," and "citrophosphate of lime" is criticised by DR. SAMBUC (*Journ. Pharm.*, April 15, p. 411) on the ground that it is an error to consider them to be soluble double salts in which the phosphate employed retains its primitive condition in the presence of the added acid. On the

contrary, Dr. Sambuc states that the phosphate is decomposed, whether it be dicalcic or tricalcic, monocalcic phosphate being formed, together with calcium lactate, chloride, or citrate, as the case may be. If this be correct, the patient, in order to take one gramme of the monocalcic phosphate, would have to swallow also one-half gramme of calcium chloride or a corresponding quantity of one of the other salts,—a proportion that, considering the freedom with which these preparations are sometimes taken, can hardly be desirable. In order to meet this objection, Dr. Sambuc proposes to use gummic acid, obtained by decomposing Senegal gum with hydrochloric acid and separating by dialysis, and states that when this is added to freshly-prepared dicalcic phosphate it combines with part of the lime, soluble monocalcic phosphate being formed, together with calcium gummate, which, being practically a regeneration of the gum, is not objectionable. As ordinary gum contains, in combination with gummic acid, lime, potash, and magnesia equal to about 1.75 per cent. calculated as calcic oxide, one hundred grammes should, according to this theory, be equal to the solution of ten grammes of dicalcic phosphate. But, in addition to this, it has been shown by Messrs. Lefort and Thibaut that natural gum arabic will dissolve 1 to 1.1 per cent. of bicalcic phosphate, possibly in consequence of the presence of some gummic acid not in combination, so that the total solvent power may be somewhat greater.—*Pharmaceutical Journal and Transactions*, April 30, 1887.

TREATMENT OF ARTERIO-SCLEROSIS.

HUCHARD recommends the following:

R Aquæ destill., ʒi℥ss;
Potass. iodid., ʒi℥ss;
Ext. aqueos. opii, gr. iss.

Dose.—2 to 3 teaspoonfuls daily.

When bronchitic complications are added the following may be used:

R Aquæ destill., ʒi℥ss;
Potass. iodid., ʒi℥ss;
Tinct. senegæ, ʒi℥ss;
Tinct. lobeliæ, ʒi℥ss;
Ext. aqueos. opii, gr. iss.

Two or three teaspoonfuls daily.

—*Les Nouveaux Remèdes*, No. 8.

The Therapeutic Gazette

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PHILADELPHIA.

DETROIT, MICH., July 15, 1887.

GEO. S. DAVIS, Medical Publisher, Box 470.

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(Journal increased to 72 pages.)

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Leading Articles.

THE IODOFORM QUESTION.

ONE would think that iodoform had been long enough before the medical public to have thoroughly established its status. Nevertheless, in many points we find the greatest diversity of opinion as to the value or even harmlessness of this remedy. On no point, perhaps, is there greater uncertainty than as regards the local application of iodoform in the treatment of tubercular deposits.

If the literature of this subject is examined we will find on the one hand numerous authors denying totally any special action of iodoform on the tubercular process; others, while perhaps admitting a favorable influence in preventing the return of the disease after total excision of the tubercular tissue, limit the action of iodoform to this alone. It is evident that if we restrict the value of iodoform to such cases as these its action cannot be regarded as specific, but merely as assisting the primary healing of the wound. On the other hand, a number of authors, led by Mosetig-Moorhof, go so far as not only to attribute specific antitubercular action from direct contact of iodoform, but even attribute to the

odor of this drug specific antitubercular properties. This contradiction is without doubt attributable to the great difficulty attending any thorough application of this drug. As an illustration of this we need only recall that the failure to heal, often seen in the treatment of tubercular ulcers and fistulæ from the application of iodoform, is not to be attributed to the lack of action of this drug, but to the difficulty in procuring thorough contact between it and all the various tortuous passages of the fistulæ.

Considerable light has been thrown on this subject by a communication published by Prof. Bruns in the *Therapeutische Monatshefte* for May, 1887. He calls attention to the fact that the progress of cold tubercular abscesses treated by means of iodoform injections should offer conclusive proof as to the value or worthlessness of iodoform. He relates the progress of fifty cases treated in this manner in his clinic. The method of treatment was to aspirate the abscess under antiseptic precautions, and then to inject through the aspirator-needle a ten per cent. mixture of iodoform, with equal parts of glycerin and alcohol, and to close the opening by means of iodoform collodium. His general experience was that this operation was followed by no local or general reaction, with the exception of a single instance where slight symptoms of iodoform-poisoning were observed. As a rule, in small abscesses a single injection serves to produce cure and gradual disappearance of the disease within one to two months. Generally, however, two to three injections were necessary, which were performed at intervals of three or four weeks. In such cases several months were required for cure, and in several cases a fistula formed to the abscess. This, however, Prof. Bruns does not regard as a serious complication, since the abscess evacuates itself through this fistula, and ultimately heals. Of the fifty-four cases which were treated by this manner forty were healed, and among them a number of abscesses from which between five hundred to one thousand grammes of pus were evacuated.

When one thinks how extremely difficult it is to obtain a cure of cold abscesses by any method, this large percentage of cures is very striking, and when it is further remembered that a tubercular abscess membrane and often tubercular bone remains behind, it seems almost warrantable to attribute with the author to iodoform a specific antitubercular action, for it is evident that the action of the iodoform does not depend either upon caustic de-

struction of the tubercular tissue or through exciting a sufficiently strong inflammatory process to accomplish its removal. It seems therefore warrantable to attribute the results to the prolonged and close contact of the iodoform with the inner wall of the abscess and of the consequent destruction of the tubercular tissue. To obtain some light as to the exact method in which the iodoform produced its action, Prof. Bruns opened a number of cold abscesses at different intervals after the injection of iodoform, and partly or totally extirpated their walls in eight cases, whose tubercular nature was clearly proved, and subjected them to microscopic examination. While no full details of the examination are given, Prof. Bruns states that the first change which follows as a result of the iodoform treatment is the disappearance within a few weeks of the tubercular bacilli from the walls of the abscess, while the characteristics of tubercular tissue give place to normal granulation-tissue. He therefore attributes the cure to the destruction of the bacilli through the application of iodoform.

ANTIPYRETICS.

AT a recent meeting of the Association of American Physicians the subject of antipyretic administration was discussed *in extenso*.

In opening the discussion, Dr. H. C. Wood advanced the following propositions:

First.—Fever is a disturbance of calorification in which, through the nervous system, heat-dissipation and heat-production are both affected. If there be a fever which is produced by a direct action of a poison independently of the nervous system, we have at present no proof of its existence.

Second.—That heat-production is regulated by a nervous apparatus, our knowledge of which is still imperfect. There is certainly an inhibitory centre which depresses or controls the production of heat. It probably does this by acting on the trophic cells of the gray matter of the spinal cord. It is also probable that there is a centre which when excited increases tissue-change, but its existence has not been absolutely proven.

Third.—Heat-dissipation is regulated through the vaso-motor nerves, so that vaso-motor paralysis is followed by an enormous loss of animal heat, and under unfavorable circumstances by death from cold.

Fourth.—Drugs may lower bodily temperature in health or in fever by increasing heat-dissipation.

The facts which he stated as demonstrating the truth of these propositions appeared to be accepted by all the members present as definite and positive, excepting in that Professor Welch, of Johns Hopkins University, stated that he believed that the experiments of Aronsohn and Sachs had established the existence of accelerator heat-nerves, and after the discussion Dr. Wood acquiesced in this.

Almost all the physicians who took part in the discussion were in accord in believing that the modern antipyretics, such as antipyrin and antifebrin, are in most cases of fever efficacious in reducing temperature, and that when properly used they do not affect the general strength or the force of the circulation; and whilst they are entirely devoid of any power in controlling the course of specific fever, they often do good by quieting the pain, promoting sleep, and overcoming restlessness through the reduction of temperature.

Almost all the speakers who claimed to have experience with the cold bath appeared to believe that its action was more favorable than was that of the antipyretic remedy. It was suggested by Dr. Wood that the cold bath, acting as a powerful stimulant to the immense mass of the peripheral nerves which reach the surface of the body, probably has an action on the organism apart from the mere obstruction of heat, and that it may be much of its soothing influence is the result of this peripheral stimulation.

The difficulties which surround the use of water as an external refrigerator agent are such that, at least in this country, most practitioners will probably prefer antipyretic drugs, although the latter are probably of inferior value.

Dr. John Guit  ras, who practised for a long time in the extreme southern parts of the United States, stated as the result of large experience that in the long-continued fevers of those sections antipyrin, whilst capable of producing a temporary influence, had no power in controlling the disease, and often seemed to lose its influence; that in a very large proportion of cases in which he had been called in consultation the best results were achieved by withdrawing the antipyretic and substituting the cold bath, which seemed not only to temporarily affect the fever, but to have some influence in subduing the disease.

DIARRHŒA OF CHILDREN.

AS the season of the year approaches in which diarrhœas are especially fatal in children, we feel it not improper to call the attention of our readers to a remedy which, though used by some practitioners, is, we think, still neglected by many of the profession. We refer to the phosphate of sodium. In the summer diarrhœas connected with a lack of digestive power, in which the stools are either clay-colored or habitually greenish, phosphate of sodium often brings a favorable response when the ordinary remedies for diarrhœa seem to irritate rather than do good. In nursing children it may be given in the milk, 10 grains of it in each bottle, or it may be given after eating, dissolved in a little water. It should be administered always in repeated small doses and not in a single large dose. Where there is habitual constipation, with occasional attacks of diarrhœa in young children, it is especially serviceable. It probably has some distinct specific action upon the glandular organs of the intestinal tract.

Another treatment of diarrhœa to which we want to direct the reader's attention anew, is the use of the cold bath. Our own experience has convinced us of the truth of the original affirmation of Dr. Comegys, of Cincinnati, that in the diarrhœas occurring in young children in intensely hot weather with more or less pronounced elevation of the bodily temperature, the cold bath will often suffice for a cure, and will often bring relief when all other measures fail. It should be given as often as the child's temperature rises; in rare cases once in every three hours. In other cases two or three times a day. The water should be of a temperature not above 80°, and the immersion should be sufficiently long to produce a distinct effect. Properly managed, these cold baths we think of inestimable value in the treatment of those forms of summer infantile diarrhœa which are the outcome of heat.

GASTRIC ULCER.

ULCER of the stomach is probably a much more frequent disorder than is generally recognized. On the other hand it probably is often believed to exist when not present. Our own experience has led us to think that the positive diagnosis as to its existence or non-existence is in some cases impossible. It may be simulated by chronic gastric catarrh

or by neurosis of the stomach. Pain after eating, with vomiting, and great epigastric tenderness are very common in hysterical women, especially in girls shortly after puberty. The absence of blood from the vomit is not of as much importance from a diagnostic point of view as appears at first sight. Hysterical vomiting is not rarely accompanied by slight or even more pronounced hæmatemesis, and we have seen fatal ulcer of the stomach without hemorrhage, and, indeed, without any history of vomiting. Gastric ulcer is of course not infrequent in young hysterical girls, but that the gastric symptoms are often not due to any stomachic ulceration is proven by their occasional sudden disappearance.

Our own experience is that in many of these neurotic cases a quarter of a grain of nitrate of silver with a grain of hyoscyamus, accompanied by soft diet, is efficacious. If, however, it fail to do good in the course of a very few weeks, its use should be abandoned, and the treatment be that of hysteria, with a use of diluted nitro-muriatic acid at meals.

In a recent article in the *Medical Press* Dr. W. H. Pearce calls attention to the fact that many of these cases do best when their eccentricities of diet are given full swing. If the patient prefers smoked and salt fish, salt meats, pickles, onions, or even Dutch cheese, he allows the article to be taken with asserted good results. A favorite article with him seems to be one which is not much used by the Anglo-Saxon race in America, namely, "potatoes with vinegar." Whether by this is meant the potato salad beloved by our German brethren or not, we do not know.

"DRUMINE."

UNDER this title our readers will recollect that we called attention to what was claimed to be an alkaloid found in *Euphorbia Drummondii* by Dr. John Reid, of Melbourne.

In the notices in which we called attention to this alleged discovery we expressed ourselves as doubting the accuracy of Dr. Reid's statements, and alluded to the entire failure at the hands of Dr. Ogsdon, experimenting with the article obtained directly from Dr. Reid, to obtain any anæsthetic properties whatever.

From articles published in the *Pharmaceutical Journal and Transactions* for June 18, 1887, we learn that our scepticism is supported by a similar failure in the hands of Mr. W. H. H. Jessup, who tested the article

also procured directly from Dr. Reid both by injecting subcutaneously and when applied to the eye, with absolutely negative results. Chemical examination also showed that the solution gave no indication of the presence of any alkaloid. In the same number of the *Pharmaceutical Journal and Transactions* is a letter from Mr. Tanner, who found that the so-called alkaloid was entirely insoluble in water, dilute acetic acid, alcohol, ether, and chloroform, but soluble in dilute hydrochloric acid, from which it was reprecipitated on the addition of ammonia in excess. The hydrochloric solution gave no precipitate with the usual tests for alkaloids, and when gently ignited on platinum foil but little charring took place, and a considerable grayish residue, soluble with effervescence in hydrochloric acid, and answering in characters and tests to calcium carbonate, was obtained. It afforded no indication of the presence of nitrogen. Mr. Tanner advances further proof to show that the substance supplied under the name of "drumine" consists mainly of calcium oxalate. It would, therefore, appear that if an alkaloid is present in the plant operated on by Dr. Reid, his method of extraction fails in obtaining it, while it is well calculated to furnish nothing more than calcium oxalate. It might also be added that the agents selected by Dr. Reid for the supply of this so-called alkaloid having found it "unsatisfactory," have declined any further supply of the article at present.

Reports on Therapeutic Progress.

AN EXPERIMENTAL STUDY OF THE EFFECTS OF PUNCTURE OF THE HEART IN CASES OF CHLOROFORM NARCOSIS.

At a recent meeting of the Medical Society of the District of Columbia Dr. B. A. WATSON, of Jersey City, read a paper on the above subject.

The results of sixty experiments on dogs were given in detail. The experiments consisted briefly in producing death by chloroform inhalation, and then within from one to three or four minutes an aspirating needle was introduced into the heart through the chest-walls, the attempt being to reach the right ventricle. In the first fifty cases the chloroform was administered rapidly and air was excluded as far as was possible. In the last ten the chloroform was administered slowly, and

with a large proportion of air. The first forty animals had already suffered some severe traumatic injury, while the last twenty were perfectly healthy animals. The punctures made in these sixty experiments were as follows: Right ventricle, 38; left ventricle, 6; right auricle, 6; superior vena cava, 3; inferior vena cava, 2; apex of the heart, 2; and not stated, 1. The resuscitations were as follows: after puncture of the right ventricle, 9; right auricle, 1. The first forty experiments gave only four recoveries, while the last twenty gave six. In only one of the sixty cases did the heart fail to respond to puncture, and in this instance the use of the needle was postponed for four minutes after the cessation of the heart's action, and one minute after breathing had stopped.

Should the puncture be carried into one of the cavities of the heart in order that blood may be abstracted? In chloroform narcosis the heart is found in diastole, and the veins in the lungs are greatly distended with blood. It may therefore theoretically be assumed that blood may be advantageously drawn from the right side of the heart. The author was assured that this procedure was practical and advantageous.

The only deaths during these experiments which could be attributed directly to the puncture were those in which the needle penetrated the vena cava. In these cases there was profuse hemorrhage into the thoracic cavity. Punctures made into the auricle are sometimes followed by a flow of blood into the pericardium. Punctures into the ventricle are not attended with any hemorrhage from the interior of the organ, but there may be a few drops of blood from a wounded cardiac vein.

The following conclusions were reached:

First.—Puncture of the heart, especially of the right ventricle, stimulates muscular contractions, and may be advantageously applied in the treatment of chloroform narcosis.

Secondly.—The best results are obtained when abstraction of blood from the cavity of the ventricle is combined with the stimulating effects produced by the entrance of the aspiratory needle.

Thirdly.—The puncture of the right ventricle is a safer and more efficient operative procedure than the puncture of the right auricle.

In the discussion which followed the reading of this paper Dr. N. P. DANDRIDGE, of Cincinnati, said the conditions under which the experiments were made were different

from those under which accidents usually occur in human beings. In the latter case the accident usually occurs after only a small quantity has been taken, and often early in its administration. The effect is probably due to a reflex effect upon the inhibitory action of the heart. In the experiments reported puncture was resorted to within one or two minutes after the cessation of the heart's action. In the accidents with chloroform it is not uncommon to have recovery after apparent cessation of the heart's action for a comparatively longer period. A large number of experiments are required to test the relative value of this procedure as compared with artificial respiration. The use of nitrite of amyl, and particularly with the subcutaneous injection of atropine, should be resorted to. This latter can always be done quickly, and has a stimulating effect upon the cardiac and respiratory centres.

DR. JOHN B. ROBERTS, of Philadelphia, said that the speaker, while he had shown the comparative innocuousness of the heart with a small needle, had also shown the danger of using chloroform as an anæsthetic in any cases, possibly cases of parturition excepted. His experiments have shown that it is more dangerous to puncture the auricle than the ventricle, which would naturally be suggested by the fact that the auricle has a much thinner wall.

DR. T. J. DUNOTT, of Harrisburg, referred to a case in which the heart was twice punctured with an aspiratory needle, and blood drawn from the cavity of the heart. It was a case of dilatation of the heart with general dropsy, etc. The operation was performed by a homœopathic practitioner, under the idea that he was dealing with a case of dropsy of the pericardium. A large quantity of blood was removed, and for a time there was improvement. The symptoms again returned, and the operation was repeated with a fatal result.—*Journal of the American Medical Association.*

STRETCHING THE SPHINCTER IN APOPLEXY.

In the *Lancet* for May 21, 1887, MR. JOHN W. TEALE reports the case of a lady, aged 64, who suffered greatly from constipation, had had several attacks of what she called angina pectoris, and lived in perpetual dread of having accumulations in the bowels, from which she had suffered. The routine treatment of mild alteratives, tonics, and aperients which Mr. Teale instituted proved a complete

failure. The sphincter was found tightly contracted, and the rectum distended with hardened fæces. In her feeble health, shattered nerves, irritable heart, and albuminous urine, an operation seemed inadmissible. Repeated castor-oil enemata were consequently resorted to, resulting in considerable relief.

About a week later two injections were employed, which proved ineffectual, and she became very restless and excited, and her face commenced to twitch, increasing in violence until these twitchings amounted to violent convulsions. When Mr. Teale reached her he found slight but well-marked symptoms of paralysis of the left side of the face, and which gradually became more decided in character, extending to the left arm and leg; the pupils were regular, somewhat contracted, slightly sensitive to light. There was no stertor, but insensibility was complete. Every few minutes there was a convulsive attack, commencing with twitching on the left side of the face, extending gradually to the left arm and leg, and then becoming general over both sides of the body, and gradually relaxing without pursuing any definite order. On examining, per anum, hardened fæces could be felt floating in enema of soapy water and olive oil, which had been given, though the sphincter was so tightly closed that the finger could only be passed with difficulty. Availing himself of the state of unconsciousness present, Mr. Teale stretched the sphincter freely, and immediately the enema poured out, followed by offensive fæces. The convulsions continued as before; potassium bromide was given by injections and retained, and the urine, which became almost solid on boiling, was drawn off by the catheter. Consciousness did not return until the next day. For the next three or four days the urine had to be drawn off by the catheter. The amount of albumen soon became merely nominal. The patient slowly recovered.

For some days she misplaced names and words. The right side of the body soon regained power, the left more slowly, but remained markedly weaker than the right. In about three weeks she returned home, the bowels then acting easily and naturally without purgatives.

A year later the patient died. The writer thinks the operation lengthened her life for nearly a year, and also relieved her from suffering. The fact that prolonged constipation from any cause is an important factor in causing apoplexy, when the arterial coats are

dégenerated, has long been recognized,—an argument, no doubt, for the early and effectual surgical relief of affections of the rectum, where they are found to exist.

COMPOSITION OF COW'S MILK.

The results of an experiment made primarily to determine the variations in the proportion of phosphoric acid occurring in the milk of the cow have been recorded by M. ANDOUARD (*Comptes-Rendus*, civ. 1298). The experiment was made on four cows, one of which was fed on pasturage, with the necessary complement of hay and bran, while the others were fed with beets, swedes, potatoes, legumes, etc. It was found that the phosphoric acid in the milk underwent a progressive diminution during the period of lactation extending to 10.46 per cent. on the initial weight in the case of the cow fed on pasturage, and ranging from 14.91 per cent. to 45.39 per cent. on the initial weight in the cases of those fed on roots, etc. It was also observed among other things that the butter, and especially the sugar, also diminished in quantity during the same period, whilst with respect to casein the milk from two of the cows contained an increasing proportion, while that from the other two contained a decreasing proportion. The paper does not contain any statements of absolute quantities.—*The Pharmaceutical Journal and Transactions*, May 28, 1887.

SOME POINTS IN THE SELECTION AND ADMINISTRATION OF ANÆSTHETICS.

At a meeting of the West London Medico-Chirurgical Society, held May 6, DR. HEWITT read a paper upon the above subject, and said that he wished to limit his remarks to the consideration of the following points: 1. The best method of administering nitrous oxide and ether, either in succession or in combination. 2. The prevention of vomiting during or after the administration of an anæsthetic. 3. The danger of inducing general anæsthesia in persons so suffering from obstructive dyspnoea. 4. The possibility of dangerous symptoms occurring from the administration of opium or morphine prior to chloroform, ether, or other anæsthetics. He exhibited an apparatus which he had used for three years in hospital and private practice. It consisted of a Clover's portable ether-inhaler fitted with a special form of face-piece, and with a bag capable of holding two gallons of gas. By

means of this apparatus any desired combination of nitrous oxide and ether could be given. The amount of gas in the bag was always sufficient, when administered with the face-piece shown, to anæsthetize a patient before gradually admixing the ether vapor; and the whole apparatus was portable, and could be changed before entering the room in which the operation was to be performed. By means of this apparatus there was no sudden transition from nitrous oxide to ether, as when face-pieces were changed during the administration. Vomiting could be prevented by rapid and deep anæsthesia. In a large number of cases he had given a half-grain of cocaine in half an ounce of water shortly before the administration of an anæsthetic. This was done with the object of lessening the sensibility of the gastric mucous membrane. Vomiting after anæsthetics was best prevented by keeping the patient upon his side, and by moving him as little as possible. The danger of inducing anæsthetic sleep in persons suffering from obstructive dyspnoea was then considered. Patients in this condition were dependent for their existence upon an increased activity of their respiratory mechanism, and failure of respiration was very likely to ensue under chloroform or ether.—*The Lancet*, May 28, 1887.

PHYSIOLOGICAL ACTION OF REMIJIA FERRUGINEA.

According to the Paris correspondent of the *British Medical Journal*, June 4, 1887, at a recent meeting of the Biological Society MM. PINET and DUPRAT communicated a note on the physiological action of *remijia ferruginea*. The preparations employed in the experiments were a watery and a hydro-alcoholic extract of the root of the plant. Both extracts, when tested with litmus-paper, showed a decided acid reaction. The hydro-alcoholic was much less active than the watery extract. The experiments were made on frogs weighing thirty grammes, and the dose was the quantity contained in three divisions out of twenty in a Pravaz syringe. A quarter of an hour after an injection into one of the hind feet, the animal was found to show general hyperexcitability, with considerable increase of respiratory movement and of cardiac pulsation. In some of the animals the energy of the ventricular contraction was so great as to produce asphyxia, which continued throughout the entire duration of the intoxication. The heart was found to be abnor-

mally red. The electrical contractility of the muscles remained intact. Ligature of the iliac artery on one side, with injection of the extract into the opposite limb, produced no difference in the result. Section of the lumbar nerves on one side, with injection into the opposite limb, caused convulsions only on the side on which the innervation remained intact. When the spinal cord was divided below the medulla, no convulsive action took place. Ablation of the cerebral hemispheres in no way affected the phenomena above described. MM. Pinet and Duprat conclude that *remijia ferruginea* acts chiefly on the medulla.

BERGEON'S METHOD OF TREATING PHTHISIS.

At a recent meeting of the Association of American Physicians Dr. E. T. BRUEN read a paper on the above subject, in which he stated that since February last he had employed Bergeon's method of treatment in sixty-one cases. Forty-four of these cases had been benefited, but of these only three appeared to regain full health. Two of these were cases of incipient phthisis, with apparent consolidation of the apex of the right lung. In one of these cases the bacillus tuberculosis was not found, although five examinations were made. In the other case the bacillus was found. In these cases the apparent recovery had been associated with a decided increase in weight. He believed, however, that the disease was simply latent. The third case was one of broncho-pneumonia. In all the other cases the lesions were more or less advanced, with the presence of cavities and profuse expectoration. In the fifteen cases in which a negative result was obtained the treatment in some was followed by temporary benefit. The good results had consisted in lessening of the expectoration, diminution of the cough, lowering of the temperature, and suspending of the night-sweats. In most of the cases there was a diminution of from fifteen to twenty beats in the pulse, and a diminution of half a degree in the temperature during the administration of the gas. Even in those cases which were benefited, and in which the temperature had been brought to normal, there would be during the progress of the treatment occasional outbreaks, with a return of the fever and the other symptoms. These, however, disappeared under a continuance of the injections. In order to determine the effect of the treatment on the bacilli, Dr. E. O. Shakespeare made a number of examina-

tions during the progress of the cases. There had been no diminution in the number of the bacilli. It was, however, thought that in those cases where the treatment had been continued for some time the reaction of the bacilli to the staining fluid was less marked.

Two cases had died. In one of these an autopsy was made. This case had been under treatment for two months. The walls of the cavity were moderately smooth and firm, but there was no tendency to cicatrization. The results were of a decidedly negative character.

In most of the cases a solution made by the addition of five grains each of sodium sulphide and sodium chloride to a pint and a half of water was the solution employed. In some cases the strength of the solution had been gradually increased, but where no benefit had been obtained from the weak solution the stronger solution did not act with any better results. In cases of diarrhoea his experience had been unfavorable, except where the gas was given in very small quantities. Chronic peritonitis was a contraindication to the use of this plan of treatment. In about one case in every ten he had observed the reaction of sulphuretted hydrogen when a paper treated with acetate of lead had been applied to the mouth.

Bergeon's method is chiefly valuable in those cases attended with bronchial catarrh. He had had very little good effect in those cases where there was thickening of the lung without much catarrh. The speaker feared that the trouble and detail necessary to the successful application of this method and the limitations of its power would cause it to be set aside for other therapeutic measures.

DR. F. C. SHATTUCK, of Boston, also presented some clinical notes on the same subject. The speaker had treated only seven cases by this method. They were in an advanced stage of the disease. He had seen such improvement follow careful dietetic and hygienic management that he had not much confidence in the results claimed for special methods of treatment in these cases. Any new method of treatment will often have an apparently beneficial effect through its influence on the mind even in those cases which are incurable. Six of the cases treated suffered with phthisis, and five were in an advanced stage of the disease. One was a case of chronic bronchitis with asthma and emphysema. Four of the patients suffered with more or less pronounced collapse from the use of the injections. Nausea, vomiting, and diarrhoea oc-

curred in several cases. In one case, although the patient was weak, no local or general ill effect was observed. In another case the treatment was continued four weeks with no ill effect. The only benefit obtained was a diminution of the expectoration. In the case of asthma and chronic bronchitis, thirty-four enemata were given. The improvement was no more rapid than on a previous occasion when the patient had been treated in the same general way with the exception of the gas. He presented the following conclusions :

1. Toxic symptoms may follow the injection of sulphuretted hydrogen gas ; these are nausea, vomiting, general depression, collapse, and perhaps headache.

2. Strong artificial solutions of sulphuretted hydrogen gas with carbonic-acid gas are apt to cause abdominal discomfort. The risk of this is diminished by heating the solution of the former gas.

3. This is not by any means a specific. If useful at all it is only as an auxiliary to the more usual methods of treatment.

4. The only benefit which we have seen that could be fairly attributed to the enemata was a diminution in the amount of the expectoration.

In conclusion, the author stated that the impression which he had formed was that the good results which had unquestionably followed this method of treatment were attributable in large part to the stimulation induced by the employment of a novel method of treatment which makes the patient feel that something is being done for him.

DR. WILLIAM PEPPER, of Philadelphia, stated that he had, with the assistance of Dr. J. Crozier Griffith, employed this method in twenty-four cases in which the treatment was continued, on an average, twenty-five days. Other treatment was frequently combined with the use of the injections. A daily temperature record was kept in sixteen cases : in four there was more or less reduction ; in eleven there was no appreciable effect ; in one the temperature increased, but this was probably a coincidence. In no case was the temperature brought from a febrile to a continuously normal condition. The fall was not more than is seen in similar cases under other methods of treatment.

In twenty cases in which the weight was recorded there was in eight more or less gain. Eight pounds in thirty-seven days was the greatest gain. In six cases the weight remained stationary, and in six it was diminished.

The improvement in cough was not marked. The expectoration was somewhat diminished in four out of twenty-four cases. Search was made for the bacilli in thirty cases, and they were found in twenty-seven. In eleven cases the examination was repeated, and only in four was there any apparent decrease. Cases of night-sweats were not numerous. In one they were checked and in seven improved. Physical examination showed no improvement in a single case. The enemata had a decided hypnotic influence in three cases. The only unpleasant symptom of any real moment was colic. This was complained of in eleven out of twenty-four cases. Three others suffered so much that the treatment could not be repeated. The colic was not often controlled by giving smaller quantities of the gas, nor did it seem to be influenced by the slowness of the injection. This method of treatment is seldom of real benefit by relieving certain symptoms.

DR. H. C. WOOD, of Philadelphia : After studying the cases treated by this method he came to the conclusion that it was of a certain amount of benefit. He saw that the method of employing the gas presented many objections. The sulphuretted hydrogen should accomplish the same results when absorbed by the stomach as when taken up by the large intestine. He has, therefore, administered the sulphuretted hydrogen gas in carbonic acid water. Water at the ordinary temperature takes up two or three times its volume of sulphuretted hydrogen. He thinks that this is a distinct addition to pulmonary therapeutics. He has tried it in certain cases with benefit.—*The Medical Record*, June 18, 1887.

THE TREATMENT OF SCROFULOUS GLANDS.

All surgeons are familiar with the slowly suppurating cervical and other lymphatic glands occurring in strumous children, which, while tedious and insidious in their course, generally after months or years of suffering end at the best in elevated or depressed cicatrices and unsightly scars. We have already referred to the method introduced by Prof. Verneuil, of the treatment of such conditions by drawing off the pus and injecting an ethereal solution of iodoform. In the *New York Medical Journal* for June 25 is an article by DR. H. C. ROGERS on the subject. He states that he has treated nine cases by this method. The swelling gradually disappeared in from three weeks to two months. The plan

is first to evacuate the pus by aspiration. To do this a large-sized trocar should be employed, handling the parts as little as possible. As soon as the liquid becomes slightly blood-stained the iodoform solution should be injected. Dr. Rogers's experience usually is that one injection will be sufficient, and he employs the injection even where he is unable to find pus, but where the centre of the swelling is soft and in a condition to break down. In such cases his plan is to inject from 10 to 20 minims of a two per cent. solution of iodoform in ether. In addition to the local treatment he employs internal medication, and speaks in the highest terms of the compound syrup of trifolium, which is a mixture containing iodide of potassium combined with the vegetable alteratives, red clover, burdock-root and prickly-ash bark, stillingia, poke-root, and berberis aquifolium, each ounce containing eight grains of iodide of potassium. Together with this Dr. Rogers uses iodide of arsenic, bichloride of mercury, sulphide of calcium or iron, to build up the constitutions. Instead of ether, glycerin may be substituted as a solvent for iodoform, ten parts of iodoform being mixed up with one hundred parts of glycerin.

MOLLIN.

LIEBREICH writes as follows concerning this new substance in the *Therapeutische Monatshefte*, Heft 4:

Under the name mollin we commonly understand a mixture of potassium soap and fat. The name itself does not inform us whether the substance is chemically one, or a mixture of substances of the same sort, or a preparation after a given formula, of ingredients prepared for the physician's use. We have as yet no name precisely describing mollin; we can only describe it as a potassium soap which contains seventeen per cent. of excess of fats, which are the ordinary soap-fat, tallow, and cocoanut oil, to which glycerin is added. The mixture is white and smeary, and strongly alkaline in reaction. This salve is very easily made, for cocoanut oil saponifies very easily when cold, and induces the same process in other fats mixed with it.

Mollin may be prepared as follows: A mixture of 50 parts cocoanut oil and 50 parts lard is treated with a solution of caustic potash, 20 parts potash and 4 water, and allowed to stand an hour. In this time saponification takes place. The mixture may be also warmed. This soapy compound is increased

by the addition of seventeen per cent. of fat, previously melted and refined. The process of saponification is slower and less complete when fat is added when the first mixture of cocoanut oil and lard with the alkali is made. To mollin so made glycerin also may be added. The solid condition of the product is dependent upon the property of the cocoanut oil to harden readily. The process may be carried on without heating if concentrated caustic potash solution is used, a fact familiar to all soapmakers. The suggestion for the manufacture of mollin was given by Unna in his remarks upon soaps containing an excess of fats. The therapeutic uses of mollin will appear as it is used more extensively.

All glycerin fats show a marked tendency to become rancid, especially when mixed with soaps. It is a well-known fact that when any error in the technique of soap manufacture is made, the importance of securing the saponification of all fats is at once evident from the instability shown by soaps containing free fat. The idea that the excess of an alkali can be neutralized by fat is erroneous, for we frequently find soaps which have been kept for years, and yet contain free fat in the presence of free alkali. The combination of the fat contained in a soap with a free alkali can only be properly performed during boiling. Neutralization is only possible when fat is decomposed by the alkali, a process which takes considerable time and a high temperature for its accomplishment. The writer states that he has often previously observed that the free alkali in a soap is extremely hard to neutralize, and that a neutral soap may be best formed by separation by centrifugal force. After the alkalies of a soap have combined, the central mass or real soap will be separated by centrifugal force, and the lye removes in still greater amount the potash and impurities. But this form of manufacture is possible only for sodium soaps. With potassium soaps chlorate of potassium will not combine with the fats, while sodium chloride forms a sodium soap. A good potassium soap then can only be made by the most careful manufacture, and will contain free alkali. It is hardly possible by direct combination to obtain a neutral potassium soap.

In mollin, also, which is a cocoanut oil potassium soap, the free alkali is not entirely neutralized, but by the addition of the excess of fat the action of the alkali is much lessened, both by the reduction of its percentage and by the local protection against its influence

which the fat affords. The choice of cocoa fat is not without detriment. This fat contains more than those of the glycerin series of the lower fatty acids, and a potassium soap made with such fat contains a considerable amount of the salts of these fatty acids. The fact that these substances may exercise an irritating influence upon the skin should lead to caution in preparing and ordering mollin, as the per cent. of fat may be changed at pleasure; the ordinary *sapo kalinus* of the (German) Pharmacopœia may prove a better material for such preparations than cocoa fat.

The following formulæ give useful and well-combined mixtures:

Saponis kalini, 100 parts;

Add

Adipis (melted at gentle heat), 50 or 80 parts;

Glycerini, 10 parts.

The consistence of this mass is not as solid as that of mollin made with cocoa fat.

The greater the amount of soap added in this mixture the more easily will the substance be washed from the skin, and by such removal of the soap under all circumstances the skin will be covered by fat. The danger that mollin will become rancid through the fat added in its preparation suggests the substitution of lanolin for the cocoa fat. The consistence of the resulting mixture is the same. It may be prepared after the following formula:

Saponis kalini, 100 parts;

Lanolini, 50 or 100 parts.

It is extremely useful in many cases in which an alkaline soap cannot be used, to mollify the action of the alkali by the addition of fat. It must, however, be remembered that such soap or ointment has a pungent taste and irritating action, and all who prepare such compounds should be instructed that they are not to be used upon wounds. The same prohibition applies naturally to mucous membrane. The applicability of such caution to mollin is evident when we remember that mollin is a preparation of soap.

We shall reach better and more accurate results and more exact information if those who use mollin will adhere uniformly to the formulæ given, thereby giving a constant basis for judgment.

A NEW AND IMPERVIOUS DRESSING.

Photoxylin, a substance in use among photographers, was recommended some time ago by Dr. Krysiniski as a suitable material

for mounting microscopic specimens, and more recently still it has been utilized by PROF. WAHL, of St. Petersburg, as a substitute for collodion in surgical practice. A five per cent. solution in equal parts of alcohol and ether he finds preferable to collodion, as it adheres more firmly to the skin, not being so easily rubbed off in washing. It is absolutely impervious to liquids, and exerts a perfectly even compression on the tissues. In out-patient practice Prof. Wahl finds that, after small operations, such as the extirpation of glands, the application of photoxylin solution enables him to dispense entirely with voluminous antiseptic dressings; also in plastic operations on the face, and in operations in the neighborhood of the male genital organs, such as those for the radical cure of hernia and castration, where it is very difficult to prevent the urine soaking through antiseptic dressings. Prof. Wahl, after carefully arresting all hemorrhage, closes the wound with sutures and gelatin plaster, and then covers the whole with a thin layer of wool soaked in a solution of photoxylin. This, it is stated, will remain eight or ten days, entirely resisting all the effects of moisture. Even in laparotomy, extensive dressings may, he believes, be dispensed with by painting a solution of photoxylin over the wound with a brush, or by the application of a layer of cotton-wool soaked in the same liquid. Photoxylin appears to be unknown in this country. It was introduced by Messrs. Mann, of St. Petersburg.—*The Lancet*, June 18, 1887.

MECHANISM OF THE THIRD STAGE OF LABOR: THE SEPARATION AND EXPULSION OF THE MEMBRANES.

At a recent meeting of the Obstetrical Society of London DR. F. H. CHAMPNEYS read a paper with this title, part of which has already been laid before the readers of the GAZETTE. The views that had been expressed on the subject amounted to four: 1. The peeling off of the membranes by the traction of the descending placenta. 2. Separation by effusion of blood. 3. Wrinkling of the membranes by uterine contraction and retraction. 4. Separation of the lower pole of the ovum by retraction of the lower uterine segment. The second of these was dismissed on the ground that the quantity of blood lost in an ordinary labor was too small to produce this result, and that, with the usual eccentric implantation of the placenta, this mechanism would fail of its purpose. He

criticised the expression "weight of the placenta," as having influence on the mechanism in the recumbent attitude, and also the expression "leaving (the process) to nature," as applied to its course in the recumbent attitude. He explained the natural process as follows: 1. Separation of the lower pole of the ovum by retraction of the lower uterine segment during the "premonitory stage" of labor; this required a complete "bag of waters." 2. Wrinkling and partial separation of the membranes by diminution of the internal surface of the uterus; this required some escape of the waters. 3. Peeling off of the membranes by the traction of the descending placenta; this required the evacuation of the uterus. The rupture of the membranes at the proper time was an integral part of the normal process. The first stage in the process seemed calculated to prevent a very common defect,—namely, the adhesion of the membranes round the lower uterine segment.—*The British Medical Journal*, June 11, 1887.

ACETONE-CHLOROFORM—A NEW DISCOVERY.

An interesting communication (an abstract of which appears in the *Monthly Magazine of Pharmacy*) has just been laid before the Académie des Sciences by M. ENGEL, in which he describes an entirely new body lately discovered by M. Willgerodt, and designated by the not very satisfactory name of acetone-chloroform. As, from a private source, we understand that the compound in question has already been tried tentatively with regard to its effects upon the animal economy, with the result that it is said to be non-poisonous when taken internally, but lowers the animal temperature when above the normal limits, and also exerts a mild narcotic action, we trust that further researches will be instituted upon a systematic plan.

The therapeutic properties of "acetone-chloroform" should be investigated without loss of time, as, if it really possesses the properties of a sedative and an antipyretic, it can scarcely fail to become a practically valuable addition to our list of new drugs.

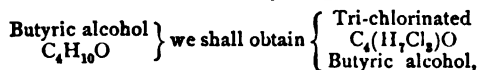
It is prepared, we are informed, by digesting, at a slightly-elevated temperature, a mixture of anhydrous chloroform and acetone in equivalent proportions, and in the presence of a little hydrate of potassium. Combination takes place without difficulty, and the principal reaction seems at first sight to be one

of simple addition in accordance with the following equation:



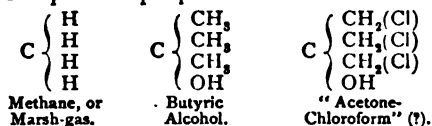
But the latter body enters into combination with the alkaline base already mentioned as being necessary to the reaction in question, forming a species of salt therewith; it thus possesses distinctly acid properties, and in fact is described as an acid by the discoverer. At the same time it must be borne in mind that as yet no reliable details of the real constitution of acetone-chloroform are forthcoming, and we must wait patiently for the further development of the interesting problem here involved. There is, however, no occasion to accept too hastily the statement that "acetone-chloroform" is really an acid at all, without some stronger evidence in support than we have before us at this moment. Alcohols are, as we all know, quite capable of forming compounds with the hydroxides of the alkali-metals, and it appears to us that this latter observation has a particular bearing upon the case.

Butyric alcohol, $\text{C}_4\text{H}_{10}\text{O}$ (like chloroform itself for that matter), for instance, belongs to that numerous class of bodies which may be classified under the "marsh-gas type," CH_4 , and of this alcohol there are or may be several isomeric modifications, as Lieben has conclusively shown. Into the details of these we cannot descend just now, but if we place in juxtaposition two formulæ of the simplest possible character, our meaning will be rendered more clear. Thus, if we replace by chlorine three atoms of hydrogen in



which, as our readers may observe, is of precisely the same composition as "acetone-chloroform."

The possible relations of the latter to marsh-gas itself may be exhibited in several ways, but a single example will be amply sufficient for our present purpose. Thus we have



So much for the hypothetical chemistry of the new compound. We may return to the consideration of the subject from a pharmacological and therapeutical stand-point upon a future occasion. It is, however, important to bear in mind that the term "acetone-chloroform" is already commercially, and quite correctly, applied to the chloroform

now manufactured upon a considerable scale in Germany (and also in the United States.—ED. W. D.) from the acetone derived from the distillation of wood and other substances. But this is merely ordinary chloroform, CHCl_3 , or, to compare it with methane,—



It therefore differs in no way from the chloroform ordinarily met with, except in the fact that it is prepared from acetone instead of alcohol.—*Western Druggist*, June, 1887.

*MANIPULATION WITHOUT INCISION AS
A POSSIBLE TREATMENT IN CER-
TAIN CASES OF STONE IN
THE KIDNEY.*

In the *Lancet* for May 21, 1887, MR. WILLIAM H. BENNETT reports the following interesting case :

An unmarried woman, 30 years old, of a spare habit and nervous disposition, came as an out-patient at St. George's Hospital in September last, complaining of symptoms which led to the suspicion that she was the subject of a calculus in the left kidney. At the same time she presented several indications of "hysteria," and stated that she occasionally suffered from fainting attacks, which were quite unconnected with the symptoms on account of which she applied for treatment. Upon examining the abdomen, which was very thin, deep pressure over the left kidney caused considerable sharp pain, and threw the superjacent muscles into rigid contraction. The kidney could be distinctly felt and moved with the hand, and seemed of the natural size and form. Taking into consideration the hysterical tendency of the patient, it could not be decided, in the absence of any very marked abnormality in the urine, with the exception of a very slight deposit of mucus and pus, whether the case was really one of renal calculus or not. Seeing, however, the ease with which the kidney could be felt, partly by reason of the thinness of the patient, Mr. Bennett determined, as drugs afforded no relief, to insure complete relaxation of the abdominal parietes by the administration of an anæsthetic, and then manipulate the kidney as freely as possible, without previously exposing it by incision, with a view, if the case were one of calculus, to disturbing the stone, and, if it were not too large, perhaps bringing about its passage down the ureter, or, in the event of the symptoms being "hysterical," with

the hope of producing a mental effect upon the patient sufficient to relieve her distress. She, however, declined the anæsthetic; the manipulation was attempted without its aid. The patient having been laid on her back upon a couch, the fingers of my left hand were dipped deeply into the abdominal wall over the kidney, the right hand being pressed forward into the loin. By a little management, the muscles being quite flaccid from the patient having become faint, the kidney could be felt quite easily between the two hands, and was kneaded as thoroughly as the circumstances allowed. The patient, although much discontented with the aching and tenderness which the operation seemed to have caused, was well enough to walk away almost directly afterwards.

Two days later she reappeared at the hospital in a more grateful mood, saying that, having suffered much discomfort for the rest of the day after the manipulation, she was seized as she was going to bed with a most acute pain in the affected loin and side of the abdomen. The pain lasted for about half an hour, during which she vomited twice. All at once an uncontrollable desire to micturate occurred, and the pain immediately ceased. No further pain followed, and there can be little doubt that a small calculus had made its way down the ureter into the bladder, although no evidence of its having passed *per urethram* was forthcoming. Moreover, it is quite possible that the manipulation had moved the stone from its resting-place in the kidney, and thus brought about its expulsion.

An isolated case like the above cannot be taken to necessarily prove much, since the passage of the calculus may have been a mere coincidence; at the same time Mr. Bennett is strongly disposed to attribute the result to the manipulation. This view receives some corroboration from a case in which the kidney was exposed and examined without the detection of a stone, although shortly afterwards an attack of renal colic was followed by the expulsion of a very small calculus, which had probably been disturbed during the exploration. Other similar cases have occurred. As bearing on the same point, it seems most probable that when relief has followed the exposure and manipulation of the kidney without the detection of a stone, the result has been due to an alteration in the position of the calculus, produced by the kneading to which the organ has been subjected. That calculi of *considerable size* may be overlooked both in the lumbar and com-

bined abdominal and lumbar operation for exposing the kidney when the organ is examined by the fingers only is certain, and it is equally certain that only stones of the smallest size can escape detection when the kidney is thoroughly explored by acupuncture,—an operation which has been at present associated with risks which are hardly more than problematic, and at all events less serious than the danger which exists of overlooking calculi of no small size when digital examination is alone employed. Manipulation of the kidney through the parietes without previous incision is possible in certain cases, the number of which is far larger than is generally supposed, when the abdominal walls are not too much loaded with fat, and the muscles have been completely relaxed by the administration of an anæsthetic. In conclusion, Mr. Bennett suggests that manipulation without incision is a proceeding worthy of trial as a treatment which may possibly prove of utility in certain cases of renal calculus, not too far advanced, as a means of changing the position of the stone and perhaps effecting its expulsion,—a possibility to our mind sufficiently strong to commend the process to the attention of physicians as an adjunct to the medical treatment of renal calculus.

BORACIC ACID IN THE TREATMENT OF LEUCORRHOEA.

From the excellent results which are yielded by boracic acid packing in chronic suppurating otitis, DR. N. F. SCHWARTZ (*St. Louis Courier of Medicine*, June, 1887) was led to employ it in a case of leucorrhœa which had resisted the most persevering use of the ordinary remedies. The experiment was successful within a fortnight, and the patient has remained well for several months since. Dr. Schwartz states that he has been equally successful in a number of other cases. His manner of using it is as follows: Having first irrigated the vagina with water at as high a temperature as can well be borne by patient, a cylindrical speculum is introduced, and the vaginal walls very carefully dried, first with a soft sponge and then with absorbent cotton. This done, boracic acid in crystals is poured into the mouth of the speculum, and pushed up against the uterus and vault of the vagina with a clean cork caught in a uterine sponge-carrier, sufficient acid being used to surround and bury the intravaginal portion of cervix, filling the upper part of vagina. A tampon of absorbent cotton is then firmly pressed against

the packing, and held *in situ* until the folds of the vaginal walls close over it as the speculum is withdrawn.

This should be allowed to remain three or four days, or even longer, as after this time there still remain some undissolved particles of the acid, nor will the tampon seem at all offensive. The ostium vaginae, if examined in twenty-four hours, instead of being besmeared with the leucorrhœal secretion or discharge, presents a clean appearance, and bathed in a watery fluid, which begins to appear several hours after the packing has been placed, and in his cases this was the only discharge noticed afterwards.

However, a second or even a third repetition may be necessary, but in none of his cases, numbering nearly a score, has he found more than a second packing called for, and in many one sufficed; and in no instance has its use occasioned pain, not even inconvenience.

THE STRING-DRAIN AS A SUPPLEMENT TO THE ORDINARY DRAINAGE-TUBE.

DR. A. R. JENKINS proposes in the *Annals of Surgery* for May, 1887, as an adjunct to the drainage-tube, the introduction of one end of thirty or forty feet of rough string, highly hygroscopic, and completely aseptic, through the usual "Chassaignac drainage-tube," so that, when the last is placed in the wound, the string may be drawn through, from time to time, as will be explained hereafter.

The string may be of cotton, linen, or wool, that has been freed of fat and disinfected, for which purpose it is recommended that it be treated after the manner that V. Bergmann prepares his gauze,—by immersing the absorptive string for one hour in the following: Sublimate 1, glycerin 50, alcohol 100, water 150, warmed; then to be dried, and kept in hermetically-sealed glass jars; it will then hold one-third per cent. sublimate, and is very absorbent. The end of the string being passed into the tube, and the tube placed in the wound, and it closed, then the strings and aperture or apertures of the tube are covered by the usual protective of "gutta-percha paper" or "Lister's oiled silk," to hinder evaporation or gluing of the string. The string is now tried to see that it draws freely, and is so placed that it lies along the line of least resistance, and closely applies to the body's surface; over the gutta-percha paper and string the gauze and cotton,

etc., are to be placed. The coil of the string may be kept in an antiseptic magazine, such as a glass bottle, which can be included in the bandage or left out, as desired; in the last case, when not being used, the bottle should be tightly stoppered, and covered by an antiseptic bandage. The draw-end should be left out, and can be drawn upon from time to time, as may be necessary, until it comes free of secretion.

The soiled end of the string can then be cut away, and it and the bandage at its emergence disinfected with a saturated solution of iodoform in ether.

The other end should be protected most rigidly against infection, as mentioned above.

Or the string might be placed in a coil in the wound itself, in form of tampon, and passed out through a drainage-tube.

This might apply in wounds such as would be left after the removal of tumors (as lipoma), or might thus be used with Martin's drainage-tube in "Douglas's fossa."

The process advocated is recommended during the first forty-eight hours, when the wound is pouring out a large quantity of serum, before granulation is established on the wound's walls, which follows especially operations in which "carbolic" or other irritants are extensively employed, and in this time the tube is most likely to be stopped by coagula.

A SPEEDY AND SOMETIMES SUCCESSFUL METHOD OF TREATING HAY FEVER.

SIR ANDREW CLARK, in an address delivered before the West London Medico-Chirurgical Society, describes as follows a method of procedure which he has employed with considerable success in the treatment of hay fever. For this treatment there are required a common laryngeal brush and a carbolic mixture, the latter being composed of glycerin of carbolic acid, one ounce; hydrochlorate of quinine, one drachm, and one-thousandth part of perchloride of mercury, heat being required to dissolve the quinine. If there is much mucus in the nostrils, cleanse them by means of a douche of warm water containing boroglyceride, in the proportion of an ounce to the pint. Dip the laryngeal brush in the carbolic acid mixture, and see that the brush is full but not overflowing. Place the left hand on the left side of the forehead, and the thumb on the tip of the nose, with the shank of the brush between the thumb and two forefingers of the right hand, and the brush itself directed upwards, push it gently but firmly into one of the nos-

trils, carry it as high as you can without inflicting injury, move it about so as to bring the mixture in contact with as much as possible of the interior of the upper part of the nostril, and then withdraw it. With another brush filled with the carbolic acid mixture, or with the same brush washed, dried, and replenished, you complete in the manner following the two operations required for each nostril. Having the left hand in the position already described, and the right hand holding the laryngeal brush, with the hair pencil directed forward from the body of the operator, push the brush along the floor of the nostril into the pharynx, and after insuring free contact with the adjacent parts, withdraw it. If during the operation the brush is overfull, some of the carbolic mixture will fall into the throat and excite coughing or some other discomfort. When you have thus finished the treatment of one nostril, and carefully removed any of the carbolic acid mixture which may have been spilt upon the nose or lips, you will proceed to treat the second nostril in exactly the same manner as you have dealt with the first. During the performance of these manœuvres great assistance will be obtained from the left hand of the operator being placed over the left side of the forehead and face of the patient. With this hand the operator can adjust the patient's head to the various movements of the laryngeal brush, and with the same hand placed on the tip of the patient's nose the opening of the patient's nostril can be adjusted to a convenient size and shape. When the local effects of a paroxysm are severe, and have extended to the back part of the soft palate, it will be desirable to introduce through the mouth into the pharynx the laryngeal brush moderately filled with the carbolic acid mixture, and there, by a manœuvre easily acquired and practised, to brush the posterior surface of the soft palate and the adjacent parts. The immediate effects of these manœuvres differ in different persons, and in the same person at different times. In all cases the effects are more or less disagreeable, and last from half an hour to half a day. Sometimes a little blood-stained mucus is discharged from the nose and throat; sometimes there is a slight frontal headache; sometimes there is a trivial cough, and occasionally you will have developed all the local phenomena of a paroxysm of hay fever.

When advising a patient with hay fever to submit to this plan of treatment for its relief, it is expedient to warn him beforehand of

the disagreeable effects which sometimes follow the application of the carbolic mixture, and to assure him that they are both brief in duration and devoid of danger. When this warning is withheld, some patients will grossly exaggerate their sufferings, ascribe all sorts of injurious consequences to the application, and cover the physician with undeserved reproaches. Sometimes a single application of the carbolic acid mixture is sufficient to prevent for a whole season the return of the hay fever paroxysm, and four times within the writer's own knowledge it has never reappeared. Usually two or three applications are necessary to insure a full chance of success. The length of the interval between the applications must be determined by the character of the immediate effects. If these are mild, the application may be renewed on alternate days; but if severe, at least three days should elapse between succeeding applications.—*The Lancet*, June 11, 1887.

SALOL.

As an extension of what we have already published on this subject, we abstract the experience and formulæ of GEORGI, of Görlitz, and SAHLI, of Berlin, regarding this remedy, which, although used in foreign practice, has not been thoroughly tested by the profession of America.

In rheumatism the unpleasant after-effects observed by other investigators were not observed. The carbolic-acid coloring of the urine persisted during the entire time of administration.

Average dosage per diem was from 3iiss to 3iii. In general the drug possessed little advantage over salicylic acid.

The antipyretic dose was 15 grains to 30 grains. A mouth-wash and gargle composed of 3ii to 3iiss of a four or five per cent. alcoholic solution, added to 3vi $\frac{1}{2}$ of water, was found useful.

The following are different formulæ for salol:

R Salol, gr. xv;
Ol. menth. pip., q. s. ad odorem. M.
Ft. chart. 10 in num.

One powder to be placed on the tongue, and swallowed with water.

Compressed tablets having been found unreliable, the following combination with starch is useful:

R Salol, gr. viii;
Amyli, gr. iss.

To be made into 10 tablets.

For external use in ulcers and skin-diseases:

R Salol, gr. vi to 3i;
Ol. olivarium,
Adipis,
Lanolini, aa 3x.

In using salol as a powder it should be combined with starch, as

R Salol, gr. viii to lxxx;
Amyli, 3xiiss.

A mouth-wash of salol is prepared according to the following:

R Ol. menth. piper., m lxxv;
Caryophyllor.,
Cort. cinnam. Zeyl.,
Fruct. anisi, aa 3iiss;
Spiritus, Oii;
Cocconelli pulver., gr. lxxv.

Digest for eight days, and to the filtered fluid add Salol, gr. xl.

This liquid should be added, drop by drop, to one-fourth glass of water, until a milky cloudiness results.—*Therapeutische Monatshefte*, Heft 4.

THE REPARATIVE TREATMENT OF SOME OF THE GRAVER FORMS OF VESICO-VAGINAL AND VESICO- UTERINE FISTULÆ.

At a recent meeting of the Academy of Medicine in Ireland, held April 1, 1887, DR. MORE MADDEN read a paper on the treatment of certain forms of vesico-vaginal fistulæ. Notwithstanding the great advance of modern gynæcology, in no respect better known than in the operative procedures by which vaginal fistulæ have been so generally rendered amenable to ordinary reparative treatment, the management of some cases of this kind still presents one of the most difficult problems that occasionally occur in our special line of practice. In the present communication the writer confines himself to those more difficult and exceptional cases of vesical fistula consequent on parturition. Among these Dr. More Madden includes all cases of vesico-uterine fistula in which the loss of tissue or the position and character of the rupture are such as to preclude the restoration of the former structural integrity of the parts, and in which either new vesico-vaginal or vesico-uterine walls must be built up by plastic operation, or else a new condition of the parts must be established. In most of the instances of vesico-uterine fistula that have come under Dr. More Madden's observation the patients

had been delivered instrumentally; and, moreover, were pluripara in whom the uterine walls had been previously softened and disintegrated by imperfect involution. In the latter cases there are, as a rule, but three courses available in the way of operative treatment,—viz., tracheorrhaphy in the first instance, followed by a plastic operation on the disrupted vesico-uterine walls; secondly, closure of the os uteri, so as to convert the uterus into an appendix to the bladder; or, thirdly, the same result may be obtained in some cases by turning the cervix into the vesical wound, within the closed walls of which it may be included. In this connection Dr. More Madden refers to a case in which, after the normal aperture of the uterus was thus closed, nevertheless the patient subsequently again became pregnant. In some exceptional instances, however, of destruction from sloughing of the entire vesico-vaginal septum, none of the reparative operations usually recommended are feasible or effectual, and in such cases the advisability of closing the vaginal orifice, so as to thus afford a possible restitution of retentive power, becomes a question for consideration. Against Simon's operation for this purpose must be recognized the consequent liability to fatal renal disease, which Dr. Emmet holds to be an inevitable result of its performance. Nor should it be lost sight of in this connection that in some instances the most extensive vesico-vaginal fistulæ may in course of time become cured without any operation by the occurrence of senile atresia of the vagina,—a fact of which two cases have come under Dr. More Madden's observation. Such instances are, however, far too exceptional to have any practical influence on the determination of the line of treatment to be adopted in any case of this kind; and in some instances, fortunately exceptional, there is no alternative to abandoning a sufferer from vesico-vaginal fistula to a life of hopeless misery, or else resort to closure of the vaginal orifice. A somewhat remarkable case of this kind is detailed in which the writer succeeded in thus curing a very extensive fistula by a modification of Simon's operation. Dr. More Madden adds that whilst regarding his modification of Simon's operation for closure of the vagina merely as a *dernier ressort*, to be adopted only in some exceptional instances of vesico-vaginal fistula otherwise incurable, this procedure, nevertheless, appears to him to be deserving of consideration in such cases. Therefore, although yielding to no one in his respect for Dr. Emmet's authority, he

would not, even by that condemnation, be deterred from again resorting in any similar case to the operation by which the patient referred to was benefited. Whether in this case any renal disease supervened or not there was no data to say. Dr. More Madden, in conclusion, observed that a patient whose condition had for years previously been as miserable as any that could well befall a woman, and who, to the best of his judgment, was otherwise incurable, was, by the operation referred to, restored to a state of comfort and apparent health, which continued for eighteen months subsequently, when her death from fever occurred.—*Medical Press*, June 8, 1887.

*CURE OF A CANCROID OF THE LARYNX
BY EXTIRPATION THROUGH THE
NATURAL PASSAGES.*

FRÄNKEL, of Berlin, reports a case in which a tumor, the size of a bean, was situated on the right vocal cord, which he removed by a snare four times in succession, and which each time returned promptly. He made a diagnosis by the microscope of a cancrroid growth, and in June, 1884, he again removed it in two sittings by means of the snare. Although he omitted to cauterize the site of the tumor with the galvano-cautery, as he had previously done, the growth did not return, and the patient, although 75 years old, has since remained well. He has also, oddly enough, preserved his voice, and can be truly regarded as recovered. Fränkel thinks that this case shows the superiority of intra-laryngeal operations for cancrroid, and he advises the following rules for operation: In all cases where the site of the tumor is definitely ascertained, as large a portion as possible should be removed with the snare or forceps, through the larynx, and under the influence of cocaine. If the microscopic examination shows a cancer to be present, and no especial danger that the cancer implicates both sides exists, an effort should be made, under anæsthesia, if needed, to remove the growth from its position with the forceps or snare. The patient should be kept under observation with the laryngoscope, and each returning mass removed in the same way. If a complete removal cannot be effected by intra-laryngeal operation, partial resection should be performed. If both sides of the larynx be implicated, the question may yet be raised whether a removal by intra-laryngeal procedure is not feasible.—*Centralblatt für die gesammte Therapie*, June, 1887.

RAPIDITY OF THE BLOOD-CURRENT IN THE KIDNEY AND OTHER ORGANS.

According to the Vienna correspondent of the *British Medical Journal*, June 4, 1887, DR. GÄRTNER, assistant to Dr. Stricker, Professor of General and Experimental Pathology, recently made an interesting communication to the Imperial-Royal Society of Physicians of that city on the rate at which the blood flows in the kidney and other organs. Several similar experiments had previously been recorded. Claude Bernard examined the rapidity of the blood-current in salivary glands when at rest, and when subjected to irritation; Sadler and Gaskell (under the direction of Ludwig) that in passive and in irritated muscles; and among the researches on this subject made in the Ludwig laboratory, must also be mentioned those of Slavjanski on the rapidity of the blood-current in the inferior vena cava, and of Basch and Tappeiner on its rate of movement in the portal vein. This method of separately examining each organ as to the rapidity with which the blood passes through it has, however, other advantages besides the immediate results obtained by these inquirers. Each organ can thereby be examined as to the presence of nerves in the blood-vessels, and as to the different conditions under which these nerves act either in the way of narrowing or distending the vessels. Some hints for therapeutic use might also be got by ascertaining the various ways in which the vessels of a particular organ are influenced in respect of the quantity of blood contained in them. This mode of investigation, moreover, makes it possible to perform comparative experiments as to the quantity of blood passing through two different organs of the same animal in equal spaces of time. From such experiments it is clear that the rapidity of the outflow of the blood from the renal vein is greater than that from the femoral vein below Poupart's ligament, though the region drained by the latter is comparatively much larger. Dr. Gärtner performed his first experiments on the kidney of the dog. A canula, provided with a tube to carry away the outflowing blood, was introduced into the renal vein, and the blood-current was observed either by counting the blood-drops as they fell, or by Ludwig's graphic method. When the operation was performed with sufficient care, and without doing any injury to the kidney itself, the loss of blood was comparatively slight, and did not interfere in any way with the experiment. In a curarized animal, when artificial respira-

tion was suspended, the rapidity of the blood-current diminished exactly in proportion as the blood-pressure increased. In three cases, not a single drop of blood escaped for more than a minute, when the animal was near suffocation. The oscillations of the blood-pressure were also shown by the quantity of outflowing blood; to each fall of the blood-pressure curve corresponded a quicker dropping of blood, and when the arterial blood-pressure increased the drops again fell more slowly. It was known that when the suffocation of the animal was continued for a longer time, the blood-pressure again decreased, but there was no corresponding increase in the number of falling blood-drops. This was another proof of the truth of the theory established by T. Wagner and Openchowski, that the decrease of the blood-pressure which preceded the death of the animal did not arise from weakness in the blood-vessels, but from diminished action of the heart. Dr. Gärtner further remarked that Carl Ludwig and Thiry had, by direct inspection of the exposed kidney, observed that it became pale, and that the blood-vessels contracted when the medulla oblongata was irritated. This phenomenon, on which one of the most important points of the doctrine of circulation is based, when produced in the manner described by Carl Ludwig and Thiry, is so slight that no exact idea can be obtained of it, even when the experiment is repeated for several times. By the experiment of the outflow of the blood, however, the contraction of the vessels can be demonstrated even to a great audience. Besides the kidney, Dr. Gärtner said he had performed some experiments on the crural vein. On suffocation of the animal, the action of the blood-current was contrary to that in the renal vein. The blood-drops fell with a rapidity directly proportional to the increase of blood-pressure. Such an antagonism had already been proved to exist by other methods; for instance, it had long been known by thermometry that after division of the sciatic nerve in animals the blood-vessels of the hind legs became paralyzed. It was observed that, in such cases, the temperature of the hind legs was raised, and their size also increased, as well as the pressure in the veins. Here also no other mode of operation could produce the phenomena in so striking a manner as what may be called the bleeding method. Before the sciatic nerve was cut through, the blood could be seen falling drop by drop from the mouth of the canula, while after division of the nerve-trunk it gushed out with

great force and rapidity, as if a sluice had been opened. Its flow could again be diminished and slackened when the peripheral end of the sciatic nerve was irritated by electricity. Dr. Gärtner stated that, together with Dr. T. Wagner, he had performed similar experiments on the brain, and that he would give an account of them at one of the next meetings of the society.

CASEIN AS AN EMULSIFIER.

At the last meeting of the Paris Pharmaceutical Society, M. LÉGER submitted some information respecting the employment of casein as an emulsifying agent (*L'Union Pharm.*, May 16, p. 193). Considering that the natural emulsions, such as vegetable juices, milk, etc., owe their peculiar condition to the influence of albuminoid substances, he inferred that these substances might be utilized in preparing artificial emulsions if they could be separated in a form convenient for manipulation and preservation. Casein, which so perfectly emulsifies butter in milk, was chosen for the experiment. It was separated by adding sixty grammes of ammonia to four litres of milk, and after twenty-four hours' contact removing the soapy layer that collected at the top, and then precipitating the serum with acetic acid. The magma of casein, after being strongly pressed, was mixed with ten grammes of sodium bicarbonate and sufficient sugar that the product should contain ten per cent. of its weight of casein: This "saccharide of casein," when powdered, is said to be easily soluble in water, and capable of being employed in the same proportion as gum in making an emulsion, without requiring the use of a mortar. The sole defect admitted by M. Léger is that the "saccharide" gives off a slight animal odor.—*The Pharmaceutical Journal and Transactions*, May 28, 1887.

WILL THE KNEE-JERK DIVIDE TYPHOID FEVER FROM MENINGITIS?

Dr. Hughlings Jackson asserted recently at the Medical Society of London that loss of knee-jerk might prove of service in the diagnosis of meningitis from typhoid fever; for he had never known knee-jerk to be absent in typhoid fever, whilst he had found it to be wanting in cases where the necropsy ultimately proved the disease to be meningitis.

At the same meeting Sir Dyce Duckworth asserted that the knee-jerk might be absent in undoubted typhoid fever. Further light is

thrown upon this subject by a paper by DR. ANGEL MONEY, in the *Lancet* for May 21, 1887. He suggests that prolonged pyrexia with all that it involves, whether in the way of direct deterioration of protoplasm by the fever heat or of indirect deterioration by collateral consequences of the pyrexia, is the cause of the very general exaggeration of the deep reflex and muscular irritability to be found in typhoid fever, phthisis, and other continued fevers, and he states that he has not seen a case of typhoid fever in which the knee-jerk was lost; though the jerk may have been absent on the day or so preceding death in fatal cases, which are rare at the age at which tubercular meningitis is common. On the other hand, tubercular meningitis does not always cause the disappearance of the knee-jerk. Sometimes the knee-jerk is increased in cases of undoubted tubercular meningitis, but only when the child is unconscious or nearly so. He has even observed, in company with Dr. Gee, that tapping of the patella tendon on one side caused powerful contraction not only of the quadriceps extensor of the same side, but also of the adductors of the thigh of the opposite side, in a case of tubercular meningitis. Such phenomena will not be found to be very uncommon if they be diligently searched for, and may be seen in diphtheritic paralysis, as well as in tubercular meningitis and phthisis. In order to answer so far as is possible the question which forms the title of this brief communication, Dr. Money formulates the following propositions: Given a case of fever with morbid mental phenomena, without a typical rash, optic neuritis, or choroidal tubercle, or any sign of cranial nerve paralysis or irritation, if the knee-jerk is lost on both sides during the illness, and the wasting of muscle is unattended with loss of response to the faradic current, the diagnosis should be meningitis rather than typhoid fever. If the knee-jerk be exaggerated, and if there be ankle-clonus, no certain conclusion can be drawn, for these conditions occur both in typhoid fever and in meningitis (and other conditions). That increase of the jerks (with or without ankle-clonus), accompanied by lively spontaneous flickerings (fibrillar contractions) of the muscles, is much more likely to be due to prolonged pyrexia than to direct disturbance of the nervous functions from meningitis or other nervous irritation. If typhoid fever be complicated with myelitis or meningitis—complications of rare occurrence—then the jerk may be lost, whilst in tubercular

meningitis its disappearance for a few hours, or a day, or a few days, is by no means rare. A variable state of the knee-jerk—*e.g.*, one day present, next day absent, and a third increased—points to meningitis, not fever.

To make what may be considered a curious comparison, Dr. Money thinks that the differential diagnosis of meningitis from mere fevers might be assisted far more by the state of the knee-jerk than by the swelling of the spleen; for unless the splenic enlargement be enormous, tubercle as well as typhoid fever and other diseases—*e.g.*, pyæmia—will account for the splenic swelling; whereas absence of the knee-jerk, or rather ascertained disappearance of the same, is practically never met with as the simple outcome of prolonged pyrexia.

A NEW OPERATION FOR HEPATIC ABSCESS.

DR. GEORGE ZANCAROL, of Paris, describes the following operation as performed by him for hepatic abscess.

The operation consists in making a large opening sufficient to expose the whole cavity of the abscess, and in thoroughly cleansing it of all pus and *débris* of sloughing hepatic tissue. It may be divided into three stages: 1, exploration of the liver; 2, opening the abscess; 3, cleansing the abscess-cavity.

1. *Exploration of the Liver.*—After having well washed the skin with a brush and soap and water, and a two per cent. solution of carbolic acid, an exploring trocar is plunged into the liver to find the abscess; this exploratory puncture may have to be repeated several times, so that a good idea may be formed of the size and direction of the abscess.

2. *Opening the Abscess.*—An opening is made with the thermo-cautery into the lower third of the abscess, five to seven centimetres (two to nearly three inches) long, according to the size of the abscess, and as much as possible in the direction of its greatest diameter. This opening must be sufficiently large to enable the surgeon to see the whole cavity with ease when the edges of the opening are held well apart by retractors. To obtain this result in abscesses of the left lobe an opening in the soft parts will suffice; but if the abscess is in the right lobe, resection of one or two ribs will be necessary. This resection is also performed with the thermo-cautery, using an elevator to detach the periosteum, and Liston's bone-forceps, care being taken not to wound the intercostal artery; should this, however, happen, the hemorrhage will cease

as soon as the abscess is opened. After resection of the bone, the abscess is opened with the thermo-cautery, keeping always in the direction of the resected rib, and with the aid of two strong retractors held by an assistant, while the margins of the incision are kept open, they are pressed against the liver, and kept in close contact with the abdominal and thoracic walls, so as to prevent either pus, or the liquids used for washing out the abscess, from finding their way into the abdominal or pleural cavities. If this precaution be observed no harm will result, even should there be no adhesion between the wall of the abscess and the parietal peritoneum; for when once the abscess has been thoroughly washed and cleansed, adhesions will be established before fresh pus can accumulate. In fifty such operations performed by the writer during the last two years, it is stated that no purulent matter has ever escaped into the pleural or peritoneal cavities, although cases were operated upon in which no adhesions existed.

3. *Cleansing the Abscess-Cavity.*—The retractors being still held in the position already described by an assistant, a strong current of warm distilled water is allowed to play within the abscess-cavity by means of a siphon; every particle of adherent pus and necrosed tissue is removed with the fingers, or with sponges fitted to proper holders, and the washing out is continued until the walls of the cavity look perfectly clean, often granulating, and the water returns clear. The retractors are then withdrawn, two drainage-tubes of large calibre are inserted in the cavity, and the dressings applied, which are left undisturbed for twenty-four hours; the cavity is then washed out again with warm distilled water, as above described, and the current kept on until the water returns perfectly clear.

As a rule, the temperature becomes normal immediately after the first washing, but if fever should reappear, or if the pus is abundant, the washing-out should be repeated every twelve hours; if in spite of all this the fever persists, or diarrhoea sets in, this would indicate that other abscesses exist in the liver, and such cases are invariably fatal.—*British Medical Journal*, June 11, 1887.

THE TREATMENT OF TYPHOID FEVER BY ANTIPYRIN AND THALLIN.

At a recent meeting of the Association of American Physicians, Dr. FRANCIS MINOT, of Boston, read a paper on the above subject,

in which the following conclusions were reached: 1. Both antipyrin and thallin have a remarkable power of reducing the temperature in typhoid fever. 2. In no case was the use of these refrigerants apparently followed by any unfavorable effect upon the course of the disease. 3. The general condition of the patient was more comfortable after taking antipyrin and thallin, which were often followed by sleep. 4. The refrigerant medication by antipyrin and thallin appears to have no specific or decided effect upon the course or issue of typhoid fever. It often contributes much to the patient's comfort; perhaps indirectly promotes his safety. 5. The effect of antipyrin and thallin in promptly lowering the temperature shows that the danger in typhoid fever does not consist in high temperature alone, and that the latter is rather an index of the violence of the abnormal condition which we call fever, though perhaps adding somewhat to the danger. 6. By the internal use of antipyrin and thallin all the effects which are claimed for the treatment of typhoid fever by the cold bath are readily obtained without the trouble and inconvenience of the latter method, and without exposing the patient to the dangers of exhaustion and shock consequent on the fatigue of removal from bed. 7. These remedies may be given without danger to the youngest patients in suitable doses, and, indeed, their beneficial effects are more decided and the unfavorable consequences are less observable than with adults. —*Medical Record*, June 11, 1887.

THE TREATMENT OF THE DYSPEPSIAS OF INFANCY, AND THEIR CAUSATION BY MICROBES.

HAYEM, of the Hospital of Saint Antoine of Paris, reports the following interesting observations in a pavilion in the hospital especially devoted to very young children:

"Shortly after going on duty at the hospital my attention was attracted by the frequency and gravity of the gastro-intestinal disorders of the children under my charge. These cases are, as is well known, among the most common of diseases among such patients. At the beginning I tried to combat them with the ordinary means of treatment at present recognized: regulation of the times of nursing and of all artificial foods, the use of alkalies, absorbent powders, calomel, hydrochloric acid, and, when vomiting was present, cocaine or sedative compounds. Hydrochloric acid had formerly seemed to me

to give the best results. But such results were irregular, at times excellent and well sustained, afterwards transient and incomplete, and more often nothing at all. After finding the matter ejected from the body is generally, in such cases, neutral or feebly alkaline, the idea suggested itself of trying another acid, and I was pleased to find in lactic acid a remarkably useful medicament.

"Meanwhile some of the children, apparently cured by lactic acid, were taken with relapses after the medicine was stopped. With others the acid seemed to lose its effect. It was also noticed that as soon as several patients, suffering from diarrhoea with greenish stools, were brought into the wards an epidemic of this disease appeared and became quite general. The contagiousness of the disease impelled me to order that all linen soiled with dejecta or vomit be soaked in a solution of bichloride of mercury, 1 to 1000. Upon this the diarrhoea ceased. The lactic acid was given in a solution of 2 to 100, in teaspoonful doses, a quarter of an hour after nursing. From 5 to 8 teaspoonfuls may be taken in twenty-four hours, amounting to from 6 to 9 minims of pure lactic acid. The effects of this treatment were promptly recognized. When vomiting was present it immediately ceased, the number of stools decreased, and the dejecta lost their characteristic green color and became yellowish. As soon as the stools became normal, in regard to color and consistence, and in two or three days (rarely in five or six), the patient was cured. But this result was only obtained when the prophylactic measures described were fully carried out. Several times neglect of these measures caused the disease to reappear, when strict observance caused it again to disappear.

"In the course of four months all the children had rapidly recovered, and the epidemic had not spread to their neighbors. In cases of tuberculosis and children in the last stages of collapse, the dyspepsia and diarrhoea were not completely suppressed by lactic acid. But even in these cases the character and color of the stools were changed, and they became yellow. While I had been occupied with the treatment of these cases, the resident physician, M. Lesage, began experiments to seek the cause of the coloring of the stools. It was not long before he was able to recognize in the greenish dejecta a particular bacillus which formed in considerable masses. He was able to isolate and cultivate this microbe, which produced the green matter by a sort of excretion, and it was owing to his studies

that these interesting results were obtained. Among other valuable facts demonstrated he showed that lactic acid, whose curative power in the children we had learned, had the property of destroying, even in dilute form, cultures of these bacilli made upon peptonized gelatin. These experiments seemed to me to explain satisfactorily the contagion of the disease. Still, they could not entirely prove that the disease had been caused by the introduction from without of the bacilli into the digestive tract. It was true, from conditions always present in the diarrhœas of children, that the microbe of diarrhœa with green stools could find, by reason of a previous modification in the character of the secretion of the digestive tract, a nidus favorable to its development and multiplication. This probably happens as follows: The microbe gains entrance to the stomach with food, and under ordinary conditions finds a medium favorable to its multiplication. In dyspepsia the secretions of the stomach are altered, and the microbe comes into the intestine without having lost its vegetative power. There it finds a medium of neutral or alkaline reaction which permits it to multiply with great activity, and produce the green color of the stools of diarrhœa. Lactic acid can act in two ways,—by combating the dyspeptic condition and rendering the contents of the stomach properly acid, or by sterilizing the germs of the bacilli, as we observed that it was sufficient, when experimenting upon cultures, to add a small amount of lactic acid to cause the spores of the bacilli to die.

"M. Lesage has undertaken experiments which will endeavor to produce diarrhœa with greenish stools in young animals by pure cultures of this bacillus, to determine precisely the conditions favorable for producing the germination of the bacilli in the digestive tract. His results are needed to explain the action of lactic acid. Meanwhile, the use of analogous agents was indicated. I have already spoken of the efficacy, in some degree, of hydrochloric acid in such cases. It is an antidyseptic agent whose action is as difficult to explain as is that of lactic acid. I can only remark that all acids certainly hinder, outside the organism, the development of bacilli; but under the conditions obtaining when they are given in illness, they acidulate only the contents of the stomach. If we can demonstrate that they act as germicides, it must be admitted that they sterilize in the stomach the germs which would otherwise develop in the succeeding portions of the digestive tract. In

addition to the acids we have the great number of disinfectants proper, among them naphthalin, iodoform, sulphide of mercury, and calomel has seemed to me to merit trial in this category. This drug has been elsewhere recommended as one of the best for this purpose. After having made trials with these substances, lactic acid has seemed to me preferable. It is perfectly well borne, it is easily and simply given, and its results have been to me very conclusive. In conclusion, the stools of nursing children suffering from diarrhœa owe their color to a material produced by a specific bacillus. It is probably produced by a dyspeptic condition which permits the bacillus to find in the digestive tube a medium suitable for its growth. I believe, further, that I am justified in saying that this diarrhœa is contagious, and that germs deposited upon linen soiled by dejecta are the agents of the contamination. However this may be, before the questions raised by the demonstration of the microbic origin of diarrhœa with greenish stools are definitely settled, I do not wish to delay longer in bringing to the notice of the profession the prophylactic and curative treatment which has made me, in a sense, master of this formidable malady, with the hope that my colleagues will come to confirm the value of this treatment."—*Bulletin Général de Thérapeutique*, May 30, 1887.

THE TREATMENT OF LUPUS BY SCRAPING.

At a meeting of the Liverpool Medical Institution MR. RUSHTON PARKER read a paper on the treatment of lupus by scraping, which in some form he recommends and performs in lupus of all kinds and stages. In the most extensive degrees of lupus ulcers he uses Volkmann's sharp spoon, in the slighter forms of pustular, scabby, or erythematous lupus, especially when also recurring on a small scale after partial healing of serpiginous cases, he uses a blunted gum lancet, a blunted wide-eye spud, the point of a tooth-elevator or tooth-scaling instrument, according to the size of the nodule to be scraped away. The part is rendered bloodless by ring-compression with the aid of stout wires of various sizes mounted in handles, and ending obliquely in a ring which is pressed into the skin around the spot to be scraped, facilitating the recognition and removal of every particle of lupoid tissue. Before removing the ring, nitrate of silver is rubbed into the raw surface, preventing or arresting subse-

quent bleeding, and providing a dry aseptic scab for the next two or three days. Two cases were shown that had been for fifteen years under treatment,—one a typical case of extensive ulcerating lupus of the face, including cheeks, nostrils, nose, lips, gums, and even the inside of the upper eyelid; the other, a marked case of erythematous lupus of cheeks and nose. The former had almost recovered after two or three scrapings during the last twelve months, the latter after seventeen scrapings (on a very small scale at each spot) during the last two years at intervals of from twelve days to three months. What is claimed by scraping is thorough and accurate removal of morbid tissue, without waste or injury to the neighboring healthy parts it otherwise keeps unhealed.—*Medical Press*, June 8, 1887.

THE ACTION OF HYDROCHLORATE OF HYOSCINE.

Under the direction of Kobert, SOHRT, according to the analysis of his paper published in the *Medical Chronicle* for June, 1887, by Dr. D. J. Leech, has made a series of experiments on the physiological action and therapeutic use of hyoscine, the results of which are published in the above paper. The conclusions arrived at by Wood, as to the manner in which hyoscine influences the various organs, are to a large extent confirmed, but on some points the views of the American and German observers are not in accord.

In healthy men the injection of $\frac{1}{10}$ of a grain gave rise, according to the latter, to disturbances of co-ordination and some muscular weakness; the head felt heavy, sank on the shoulder, and could only be lifted up with difficulty; the limbs likewise felt heavy, and the upper eyelid could hardly be raised; there was a sense of fulness of the head, the pupils were dilated, and a tendency to sleep was noticed in every case; the throat was dry. The hallucinations, delirium, nausea, and trembling, which have been described by Wood and other observers as following the administration of the hydrobromate and hydroiodate of hyoscine, were not observed by Sohrt and Kobert.

Hyoscine, according to Kobert, even in large doses, is well borne by some of the lower animals; a cat recovered after 9 grains, and a small rabbit was unaffected by 3 grains. After large doses it is excreted unchanged by the kidneys. It influences but little the cerebral functions of the lower animals, but has

a markedly calming effect on man when the brain is excited. The depression of the reflex excitability of the spinal cord, which, according to Wood, was present in lower animals after the administration of hydrobromate, was not observed in the experiments made by Sohrt.

Claussen, who published his investigations on the action of hyoscine in 1883, stated that this drug stimulates the vagus and decreases the heart's frequency. Wood concluded that it had no influence on the vagus. Kobert, however, is of opinion that it paralyzes the vagus terminations in the lower animals, and probably also in man. In a lunatic with depressed circulation, which he attributed to inhibition exerted by the brain on the heart, he found that hyoscine always improved the pulse. In healthy men, however, increased rapidity of the pulse, which ought to follow vagus paralysis, was not always noticed. It antagonizes the influence of muscarine on the heart. In cold- and warm-blooded animals it dilates the peripheral vessels, probably by its paralyzing influence on the ganglia contained in their walls. Kobert does not think that it influences the vaso motor centre, as the experiments of Wood led him to believe. The respiration is unaffected, according to Kobert, while Wood considers that this drug has a depressing influence on the respiratory functions, acting in all probability on the respiratory centre.

Hyoscine certainly diminishes the secretion of saliva, hence the drying of the throat which follows its use. The secretion of perspiration, too, is lessened, and some of Sohrt's patients, who tried both hyoscine and atropine to check sweating, preferred the former drug.

It is well known that muscarine increases intestinal peristalsis; hyoscine antagonizes this influence, paralyzing therefore the nerve apparatus on which muscarine acts.

According to Dr. Emmert, of Berne, hyoscine acts more energetically and rapidly as a mydriatic than either atropine or duboisine, and is effective even in solution of 1 part to 1000. Kobert, however, states that complete dilatation of the pupil is only produced by full doses. It acts, he says, by paralyzing the periphery of the oculo motor nerve. Sohrt found that $\frac{1}{10}$ of a grain dilated his pupils without paralyzing accommodation. Sohrt gave subcutaneously from $\frac{1}{10}$ to $\frac{1}{100}$ of a grain to a number of lunatics suffering from mental excitement and insomnia, who had taken other calminatives in vain. He administered the drug about one hundred times.

Sleep was always produced, and no threatening symptoms were noticed.

As a rule, the patients fell asleep in ten to fifteen minutes after the injections, and did not awake for five to eight hours. A little fullness of the head was at times complained of during the morning following an injection. It is specially worthy of remark that the hyoscine produced good results in several cases in which hyoscyamine in full doses had been ineffectual. Kobert is inclined to consider hyoscine beneficial as a sedative in mental diseases only.

EXTIRPATION OF THE CRICOID CARTILAGE FOR ENCHONDROMA.

Böcker, of Berlin, reports in the *Centralblatt für die gesammte Therapie*, June, 1887, the case of a man, aged 62, on the cricoid cartilage of whose larynx there was a hard tumor as large as a hazel-nut. After performing tracheotomy, examination with the finger showed that the tumor was not movable, but embodied with the flat and also curved surfaces of the cricoid cartilage. The operator then introduced a tampon canula, and split the larynx to the hyoid bone, sawing through the thyroid cartilage, and extirpated the cricoid cartilage, leaving the arytenoid cartilages behind. The tumor proved to be an enchondroma, with the formation of spongy bone-substance in its interior. The patient recovered from the operation, but was obliged to wear a permanent canula, as the vocal cords approximated otherwise on inspiration. Deglutition was unimpaired, and the patient was able, by stopping the aperture of the canula, or by using Brun's canula, to speak, although the voice was raw and hoarse in quality. At the end of a year the patient remained without any indications of a return.

SANITATION OF THE LYING-IN CHAMBER.

At a meeting of the Academy of Medicine in Ireland, Dr. BOXALL, in a paper dealing with the above subject, pointed out that much of the illness following delivery was essentially of a preventable nature. It is not the mortality alone which should be taken into account. Those minor ills of the puerpera, the outcome of less fatal attacks, must be also included. Septic poison can only be produced within the passages where air is permitted to enter, or any decomposable material is left behind; for both the presence of air and a suitable nidus are essential to de-

composition. A special liability, however, exists of the poison, ready made so to speak, finding an entrance from without. Dr. Boxall urged the importance of inquiring into the antecedents of the nurse, with a view to ascertain if she had been nursing or otherwise brought into contact with any person suffering from septicæmia or pyæmia, burns, abscesses, or acute specifics. If exposure have occurred, he advised a complete change of clothing, and a general carbolic or iodine bath. He regarded as the most important element in antiseptic midwifery the thorough washing of the hands with soap and water, including the use of the nail-brush; but he further advised the soaking of the hands and wrists in strong antiseptic solution (sublimat 1 in 1000, or carbolic acid 1 in 20) immediately before making any examination, performing any obstetric operation, or touching the genitals of the patient. Second only in importance to this was the thorough washing and subsequent disinfection of all instruments and utensils employed. The abolition of sponges, and the employment of cotton-wool or tow in place of napkins, he thought beneficial in every way. Special inquiries should be made into the source of all articles passed on from one patient to another, such as binders and mackintosh sheets. Parish bags in use among the poor should always be regarded as likely to contain assorted samples of infection. The condition of the drains should be carefully ascertained, and any defects remedied long before the expected date of the confinement. Too little attention was frequently paid to this point, and also to the subject of ventilation. A fire should be kept burning in the grate, and one window at least opened a few inches at top. With regard to the choice of antiseptic agents, he urged the advisability of employing one of universal applicability rather than several, more especially when incompatibility exists. Sublimate is incompatible with soap (hence the hands must be well rinsed before they are immersed in the solution) and with oils (hence sublimated glycerin or vaseline should be substituted for carbolic oil or lard, as a lubricant); carbolic acid is incompatible with Condyl's fluid, which, again, is decomposed by soap, while iodine enters into combination with the alkali contained in it. These are points which are frequently overlooked. Whatever antiseptic be used, the strength should invariably be measured accurately, for if the proportion be merely guessed at, not only may the solution be so weak that its sepsis-destroying properties

become much deteriorated or are quite destroyed, but, on the other hand, it may be so strong that great danger may result, either locally to the living tissues or generally by absorption, especially when the more powerful agents are employed in the form of douche after delivery. For the hands and instruments he advocated the invariable employment of corrosive sublimate (1 in 1000), or carbolic acid (1 in 20): solutions of the same strength to douche the vagina in every case during the first stage of labor, and after labor subsequently to douche the uterus also, where any intra-uterine interference or foul discharge from the cervix specially indicated such a proceeding. But after the first douche the solution might usually be reduced to half the strength. The sublimate douche frequently administered was not unattended with danger, and he would never advise its use unless the patient were under constant observation. In ordinary cases, when the douche was given as a routine practice, he considered Condy (color of claret) or boracic acid (saturated solution) of sufficient potency. While he invariably advocated the douche (giving morning and evening till the lochial discharge ceases, at from 110° to 115° F.) as a routine practice when the services of a competent nurse are available, he felt sure that in the hands of an ignorant woman more harm than good might ensue. In such a case it was advisable to trust to the more simple details necessary to insure thorough washing and disinfection of the hands and instruments, the exclusion of all sources of infection and of decomposition from, and free ventilation of, the lying-in chamber, and to limit the employment of the douche to the labor, unless special circumstances dictated its subsequent use, and then it should be performed by the doctor in person or under his immediate supervision. Intra-uterine irrigation should never be intrusted to the nurse, however efficient she may be.

DR. INGLE thought Dr. Boxall must have selected an unusual season or place for the statistics given. He did not think the experience of private practitioners would furnish anything near such an estimate, but rather evidence wholly to the contrary. Effort after such sanitation as had been described by Dr. Boxall might be of service in lying-in institutions, with trained skill and careful medical oversight; but in general practice he thought it undesirable that much interference with the parturient should be encouraged other than great cleanliness. Injections of vagina, except specially needed,

were rather to be discouraged, as involving many risks.—*The Lancet*, June 18, 1887.

THE TREATMENT OF EPISTAXIS.

The embarrassment too often created by the persistence with which hemorrhage from the nose continues in some cases, notwithstanding that resort is had to the extreme course of plugging the nares, renders any suggestion for effectually controlling this accident acceptable to practitioners. Its occurrence, moreover, not unfrequently takes place under circumstances that tend to increase the concern naturally aroused by loss of blood so alarming in extent as in many instances it is; very often the surgeon is hurriedly called in to arrest the flow without having been informed of the nature of the illness he is about to attend, and he is consequently unprovided with the special appliances deemed necessary for meeting such an emergency, and this, it may be, at a distance from home much too great to allow of any steps on his part towards procuring the means of easily making and placing in position the plugs with which, as a rule, he would seek to put an end to the bleeding. This question has recently been under discussion at the Paris Academy of Medicine, before which body M. Verneuil has described a method that he is disposed to regard as specific in even grave cases, and which consists in applying over the region of the liver a counter-irritant in the form of a large blister; and he narrated three cases in which this plan of treatment effectually arrested the epistaxis, even after trial with digitalis, ergotine, and plugging had been made in vain. However successful the proceeding may be, it is impossible to regard it as less than a severe remedy, and if a simpler one should prove to be attended with equally good results, the choice, in ordinary cases, would most certainly lie with it.

That such is the case would appear to be the fact from the results claimed by MR. CHARLES H. WADE (*Medical Press*, June 1, 1887), which follows the immersion of the feet and legs of the patient in water as far as possible, and as hot as can be borne. He states that he is indebted for this method to Mr. Jonathan Hutchinson, who found it equal to the needs of all occasions on which he employed it. Mr. Wade also states that he has employed this plan in a number of cases with the greatest success. The success of this process evidently depends upon the abstraction of blood from the head, owing to the

greater demand for it in the lower extremities under the influence of the hot water.

Moreover, it is probable that the force of the outflowing stream through the nostrils being once diminished, coagulation is encouraged in the nasal vessels as a consequence of the loss already sustained, for the tendency, even in obstinate cases of epistaxis, is undoubtedly to the production of clot after a certain period in the process of bleeding. The frequent uselessness of hæmostatics during the flow also points to the same conclusion; for these agents act readily enough when once the loss of blood is arrested, they fail earlier because the effect of their local action is undone by the persistence of a current past the points affected, but which current is slowed or even stopped when a new demand for largely increased supplies of blood is set up in a more dependent part of the body.

It is impossible not to see in the plan of M. Verneuil a close relation to the one described, though the latter has many elements of advantage to recommend a preference for it, at any rate, at first. Whatever opinion may be held as to its mode of action, however, there can be no question of its extreme value as a mode of controlling epistaxis. It is sufficiently simple to be tried in all cases; it will rarely or never fail.

FLUORIDES OF AMMONIUM AND IRON IN HYPERTROPHY OF THE SPLEEN.

Believing on physiological grounds that fluoride salts will probably prove as efficacious in the treatment of chronic splenic hypertrophy as hydrofluoric acid has done in the treatment of bronchocele at the hands of Dr. Woakes, DR. JOHN LUCAS (*Practitioner*, June, 1887) gave the former a trial, and has conducted a series of therapeutic and clinical experiments with these drugs, of which the following is a summary: Certain physiological effects, more or less common to all the cases, were observed. Briefly, there was a marked influence on the blood-pressure, which had a downward tendency at first; the pulse fluctuated and the number of beats was lessened. In this respect Dr. Lucas's experience was quite in accord with that of Dr. Coates. It was also found that the drug possessed antipyretic properties when the temperature ranged above the normal point, and it prevented attacks of ague, thus proving it to be an antiperiodic. Dr. Coates writes that he did not notice this action. In all the cases it

produced nausea at first, though gradually a sort of tolerance appeared to have been established, and the drug could be borne in much larger doses. It produces some intestinal irritation, probably acting more on the duodenum, and giving rise to some diarrhœa. Dr. Lucas is not sure that it has any action as a hepatic stimulant. The appetite after a time improves under its use. Almost all the patients complained of a pricking or twisting pain or uneasiness in the spleen itself, the original pain being sometimes aggravated. When given carefully and after meals, which should be the invariable rule, it is better borne, and does not produce nausea and purging to the same extent. It certainly seems to excel, in reducing the size of the spleen, any other method of treatment with which we are acquainted. It is a new remedy in this connection. Although Dr. Lucas began with small (5-minim) doses, he should be disposed to start with 20 or even 30 minims diluted in an ounce or two of water, and administered always after a meal. The combination of iron with hydrofluoric acid would prove more valuable on account of the hæmatinic properties of the former, and because as an adjunct it would exercise its astringent and tonic influence on the mucous lining of the stomach and intestines, and thus in a great measure tend to counteract the unpleasant effects complained of, and perhaps also to augment the evident specific action on the spleen. The fluoride of quinine can easily be prepared, and so also can the triple fluoride of iron, quinine, and ammonium.

ANTIPYRIN AND ANTIFEBRIN IN HEADACHE AND EPILEPSY.

The use of these two drugs in headache and epilepsy has recently been attracting a certain amount of attention, and we have already laid before our readers the analyses of some recent literature on this subject. In the *New York Medical Journal* for May 28, 1887, DR. ALLAN McLANE HAMILTON extends the experience of his predecessors with the use of these drugs. Some of the cases of headaches in insomnia and epilepsy under his care had already been treated with more or less success with the salicylate of sodium, and the cases of epilepsy were under modified bromide and other treatment.

The cases of headache selected were those of migraine of the angeio-spastic and angeioparetic varieties, as well as ordinary facial or sub-occipital neuralgias; and the cases of

epilepsy which were chosen were those of the symptomatic form complicated with objective and subjective indication of cerebral disease, as well as the simpler forms apparently dependent upon continued states of cerebral ischæmia, cerebral instability, etc.

In angeo-spastic migraine with evidences of cutaneous anæmia, dilated pupils, and coldness, the headache commencing in the morning, Dr. Hamilton found both antipyrin and antifebrin would quickly abort the paroxysms after the first dose.

He reports several cases illustrating the truth of these statements.

In four other cases of epilepsy in which either antipyrin or antifebrin was used there was some improvement in three of the cases, in each of which there was post-epileptic headache; and aggravation of the disease in the fourth, the patient's paroxysms being symptomatic of coarse cerebral disease. In one case of pure hystero-epilepsy the beneficial action of the remedies was absent.

Dr. Hamilton has also used both drugs in cases of habitual insomnia, in doses varying from 3 to 8 grains of the antifebrin, and 10 to 20 of the antipyrin, without appreciable result, though in a case of maniacal excitement, due to nervous exhaustion and connected with moderate rise of temperature (102° F.), 15 grains of antipyrin repeated twice produced refreshing sleep and a subsidence of excitement. There can be no doubt, however, that in wakefulness due to general disease, especially with high temperature, the value of both these drugs as hypnotics is very great.

Dr. Hamilton has at present other patients under treatment, and will subsequently report progress. It would seem as if both remedies were of value in headaches or cerebral states attended by anæmia, or in the excitement due to cell-malnutrition and exhaustion; and, though antipyrin seems to be the more serviceable remedy, it possesses drawbacks which do not belong to antifebrin. It would appear as if the remedies were valueless or even harmful in cases of organic or symptomatic epilepsy, but worthy of a trial in the light cases attended by rather general cerebral vascular spasm and not much muscular movement. In several cases of *petit mal* the good effect of continued doses of antipyrin and antifebrin is manifest, for the losses of consciousness are far less frequent than when the patients were under other treatment. So far as tolerance goes, he has given to one patient 45 grains of antipyrin in two hours without ill effects.

THE USE OF PILOCARPINE IN DISEASES OF THE LUNGS.

RIESS has arrived at the following conclusions, as published in *Schmidt's Jahrbuch*, 1887, No. 5:

The writer believes that the fear that pilocarpine will depress the heart's action is greatly exaggerated, as he has given it in a large number of heart-, kidney-, and lung-diseases, and has never seen severe collapse attend its use. The favorable effect of the drug in pulmonary disease is very little known. Its good effect is dependent upon its property of producing a plentiful fluid secretion in the air-passages, and thus facilitating the removal of inspissated masses formed by chronic hypersecretion.

Riess observed especially good results in chronic bronchitis with scanty, tenacious sputa, and especially where asthma was a complication of emphysema. The dosage with a large number of patients of middle age and well-preserved strength was daily $\frac{3}{10}$ of a grain by hypodermic injection. To old and feeble patients half this amount ($\frac{3}{20}$ of a grain) was given in one dose on alternate days. Dyspnoea was relieved on the first day of administration, asthma was checked, and fine râles were heard over the chest, and free expectoration followed. After from twelve to fifteen injections a very perceptible improvement occurred, which persisted for weeks, and often for more than a month.

Riess also believes that the drug is of the greatest use in asthma. Its good effect is probably produced here by its power to secure the expulsion of crystalline and spiral bodies which form in the finer bronchi, and also to prevent their recurrence. In pneumonia, after the acute stage has passed, resolution may be hastened by pilocarpine. It will also relieve and hasten the spasms of whooping-cough. The dosage has been described. Riess has never given adults more than $\frac{3}{10}$ of a grain at a dose; with children he has never exceeded $\frac{3}{20}$ of a grain. With such doses no especial diaphoresis is produced, and need not be hastened by a warm pack. The subcutaneous method is far the best.

PYRIDINE TRICARBOXYLIC ACID AS AN ANTIPYRETIC AND ANTIZYMOTIC.

Pyridine, as is generally known, is one of the products of coal-tar, and it also occurs in the dry distillation of nitrogenous carbon compounds, and may likewise be obtained

when some of the organic alkaloids are distilled with the caustic alkalis.

According to a statement of DR. C. J. RADEMAKER (*Medical Herald*, June, 1887), pyridine tricarboxylic acid ($C_5H_4(CO_2H)_3$) may be prepared by completely oxidizing quinine by means of permanganate of potassium; filtering the solution from the precipitated carbonate of manganese, and separating the carbonate of potassium from the solution by means of tartaric acid. The solution is again filtered in order to separate the bitartrate of potassium, and evaporated at a low temperature until a pellicle forms and set aside to crystallize.

Pyridine tricarboxylic acid crystallizes in plates with one and a half molecules of water; it becomes anhydrous at a temperature of 115° to 120° ; chars and melts when rapidly heated to 250° , with decomposition; at 180° it already breaks up into carbonic and cinchomeric acid. Pyridine tricarboxylic acid is very soluble in water, but insoluble in alcohol, has a neutral reaction to litmus-paper, and a slightly bitter taste, which is not disagreeable, and does not remain long in the mouth. When this compound is distilled with caustic lime, pyridine distils over. To ferrous sulphate pyridine tricarboxylic acid gives a red color.

Pyridine tricarboxylic acid, when given in doses of 5 grains to cats or dogs, produced marked decrease of temperature and diminished cardiac action without muscular debility. It seemed to have no poisonous effect whatever in these doses. In larger doses it had a still more sedative effect. It produced no derangement of the stomach or bowels, but it slightly diminished the rate of breathing; the only organ that it stimulated was the kidneys; and the drug was readily recognized in the urine by its reaction with ferrous sulphate. This drug also prevents and stops fermentation and putrefaction when commenced, and when a few grains of it are placed in a jar containing the bacillus butyricus and gonococcus they shrivel up and lose their power of reproduction. From its physiological action on the lower animals the conclusion necessarily follows that pyridine tricarboxylic acid is a powerful antipyretic and antizymotic, and that it is indicated in all diseases requiring sedative and antizymotic treatment.

In malarial diseases this drug acts better than quinine; it does not produce that cerebral disturbance, such as ringing in the ears, dizziness, and the so-called quinine intoxication. It is much more readily taken, and produces no derangement of the stomach and

bowels. Ten grains of it will generally suffice to break up the paroxysms. It may be given in solution or pill form. The form in which Dr. Rademaker generally administers it is the following:

R Pyridine tricarboxylic acid, gr. xxxii;
Syrupi aurantii, ℥ii.

M. ft. et Sig.—Teaspoonful every two hours, commencing twelve hours before the expected attack.

But it is in asthma, especially in that form of asthma called spasmodic, that this drug works wonders; 1 or 2 grains administered during paroxysms cuts the attack short almost immediately, and when given before the expected attack it generally prevents the paroxysms. This drug contests every inch of ground with its rival, the iodide of potassium. In asthma depending upon organic lesions it may be considered as inert.

In pertussis, also, this medicine has a power of controlling the paroxysms and cutting short the disease. During the last epidemic of diphtheritis Dr. Rademaker gave this drug a fair and impartial trial in this very dangerous disease, and its administration was attended with such marvellous results that under no circumstances would he resort to any other treatment in the future. Of course local treatment was not neglected.

In typhoid fever, when the temperature rises above 104° F., this medicine acts better as an antipyretic than the cold bath or quinine, the temperature remaining longer lower, and by comparative analysis of the urine there is less waste while this drug is administered. This is his experience of the action of this medicine in not less than one hundred and fifty cases of typhoid fever in the last three years. In hectic, also, this drug diminishes the temperature and gives the invalid a comfortable night's rest. Of course the medicine is not curative in these diseases, but very palliative. And last, but not least, it may be considered a specific in gonorrhœa, when used as an injection, no other treatment being necessary.

SUBCUTANEOUS INJECTION OF COCAINE IN SURGICAL PRACTICE.

In the *Vratch*, No. 50, 1886, p. 892, DR. F. J. BARSKY, of Kharkov, writes that subcutaneous injection of cocaine is extensively used in the clinique of Professor W. F. Grube as an anæsthetic in cases of removal of superficial new growths, such as sarcomata, fibrosarcomata, lipomata, carcinoma of jaw, epithelioma of lip, atheromata, etc.; also in cases of

simple incision, scooping out with a sharp spoon, cauterization, destruction of hæmorrhoids with Paquelin's thermo-cautery, radical cure of hydrocele, removal of foreign bodies (needles, etc.), amputation of fingers, evulsion of nails, rhinoplastic and osteoplastic operations, gouging out bone, etc. The result of those observations may be summed up as follows: 1. An injection of 5 centigrammes of cocaine is sufficient to produce complete anæsthesia of an area measuring from four to six square centimetres. 2. Anæsthesia is complete in five to seven minutes, and lasts from twenty to thirty minutes. 3. Tactile sensibility is preserved, but only to a very slight degree. 4. Artificial local anæmia, produced by pressure with a drainage-tube or otherwise, seems to intensify the anæsthetic effect. 5. The dose used varied between 1 centigramme (a syringeful of a one per cent. solution) and 2 decigrammes (four syringefuls of a five per cent. solution), but those most often employed were 5 centigrammes and 1 decigramme. As a rule, the doses up to 12 centigrammes did not produce any general effects; but in a nervous woman, aged 38, with sarcoma of the parotid gland, 8 centigrammes gave rise to formication and numbness over the body, paleness of the face, giddiness, weakness of the pulse, dryness of the mouth and pharynx, difficulty of swallowing, dyspnœa, oppression in the chest, and vomiting. In a strong peasant, aged 45, with dry gangrene of two phalanges, 1 decigramme produced only dryness of the mouth; 12 centigrammes caused only a slight acceleration of the pulse; 15 centigrammes produced, in from ten to twenty minutes, acceleration and weakening of the pulse, dryness of the mouth, sometimes giddiness and pallor, and once a condition resembling syncope. A dose of 2 decigrammes, in an anæmic girl, aged 13, in whom the os calcis was scooped for caries, gave rise, in fifteen minutes, to dilatation of the pupils, and on the next day to headache and general malaise. 6. Inhalation of amyl nitrite (1, 2, or 3 drops, on a piece of cotton-wool) seems to be the best physiological antidote to cocaine; its action manifests itself very rapidly after a few whiffs. 7. The osseous system, even in its superficial parts, is very incompletely anæsthetized by cocaine. 8. Cocaine has no influence on the process of healing. 9. Cocainization presents many advantages compared with other local anæsthetic agents, the chief ones being rapidity of action, ease of application, harmlessness in regard to the tissues with which the drug

comes in contact, and convenience for use in regions which are inaccessible, or nearly so, to other local anæsthetics. 10. Cocaine will supersede chloroform in many cases, as in cardiac or pulmonary disease, etc., or where the use of chloroform is difficult owing to the position of the patient,—for example, that *à la vache* in operating for hæmorrhoids, etc. Professor Grube and Dr. Barsky have lately tried with success a combination of cocaine with morphine, as recently recommended by Professor Schnitzler.—*British Medical Journal*, June 25, 1887.

IODOFORM INUNCTION IN MENINGITIS.

In the *Practitioner* for May, 1887, MR. R. C. HOLT publishes notes of five cases of meningitis occurring in children, in three of which cases success followed the employment of an ointment containing ten per cent. of iodoform rubbed into the shaven scalp. In the three successful cases the bones of the head had not coalesced, and in all the cases the treatment was not commenced until the disease was well marked. The results appear to encourage the further trial of this treatment, and as soon as possible after the diagnosis is made.

A NEW METHOD OF TREATING LOCAL TUBERCULOSIS.

At a recent meeting of the Society of Physicians of Vienna, KOLISCHER, one of the clinical staff in Albert's surgical clinic, reported his investigations with acid calcium phosphate injected into tuberculous joints. He based his experiments upon the process of calcification, which occurs when tubercular matter becomes innocuous, and reasoned that the agent selected would conduce most to such a process. He also cited cases where an inflammation set up in tubercular joints by fracture or other causes had destroyed the tuberculous process. A concentrated solution was used, because the quantity of dilute solutions required permitted an easy escape of the fluid. Prompt healing of tuberculous joints followed in from four to six weeks. The reaction which was produced was decided as a general rule, but at times was very slight. The difference in the behavior of the tissues led to a division of the cases into two classes,—one in which an inflammatory reaction, which obliterated the tuberculosis, followed promptly; the other, a gradual calcification, resembling the healing of tubercle,

seen in lung-tissue. Where necrosis was in progress it was expedited, and pus and necrosed bone were discharged freely. Enlarged lymphatic glands were observed to rapidly diminish in size, and shared in the contracting process. A peculiar demarcation, resembling the line of gangrene, was observed at the edges of the injection; and ulcers, after the separation of the slough, showed a base of clean, red granulations, which healed very rapidly.

The first case exhibited was that of a girl who had suffered tuberculosis of the elbow-joint. The position had been ankylosis at a right angle. The integument had been very painful and sensitive; the olecranon could not be felt. After injection a stage of reaction and fever followed, succeeded by a period of hardening. Complete absorption followed in three weeks, the possibility of passive motion.

A second case of tubercular joint-disease had also a stage of reaction, hardening, and absorption. There was remaining only a small hard mass, which would soon, Kolischer thought, be absorbed. He had observed that cases in which the process of tuberculosis was most acute responded most promptly to the remedy.

In a third case the site of the disease was the outer site of the ligamentum patellæ; the tubercular tissues had completely disappeared, and the joint was fully restored. While the first three cases had been those of patients comparatively young, the fourth was the case of a well-marked tubercular process in the hand of an adult: the result was also favorable.

In these cases, which were those of ginglymoid joints, it was observed that necrosis of the fascia about the joint occurred; the final result was a more rapid separation of the necrosed fragments and a quicker healing with good motion. In the first of his investigations the reporter made parenchymatous injections of chloride of calcium; this occasioned such violent reactions that it was abandoned; and acting upon the researches of Freund, a Vienna chemist, the solution of calcium phosphate, containing an excess of the phosphoric element, was substituted.

Kolischer thought the phosphoric acid the potent element, and the calcium an adjuvant whose work was not explained.

PROFESSOR ALBERT, in whose clinic the experiments were made, considered the results worthy of careful consideration. In the beginning he had been sceptical as to the re-

sults, but he was convinced that "there are facts new and worthy of consideration." He recalled his experiments in igni-puncture in localized tuberculosis, and said that good results could be thus obtained, but not mobility in diseased joints, which was certainly a great desideratum.—*Wiener Medizinische Blätter*, May 26, 1887.

Reviews.

CYCLOPÆDIA OF OBSTETRICS AND GYNÆCOLOGY: THE PATHOLOGY OF LABOR; THE USES OF ERGOT. Vol. III. of a Practical Treatise on Obstetrics. By Dr. A. Charpentier. In four volumes, two hundred and forty-eight fine wood engravings.

New York: Wm. Wood & Co., 1887.

This volume opens with Part VI., and contains three chapters,—the first on maternal dystocia, the second on dystocia due to the foetus, the third on ergot and its uses. The second chapter contains a section on monstrosities, profusely illustrated, which adds very much to the value of the work. The chapter on ergot and its uses is an exhaustive study of this drug. The author adopts as his own Pajot's law, "As long as the uterus contains anything, be it child, placenta, membranes, clots, never administer ergot." This is very sweeping, and relegates ergot to the museum of defunct drugs, so far as obstetrics is concerned. He gives it simply for inertia, after the termination of the third stage. Now, while ergot should be rarely, if ever, given while the child occupies the uterine cavity, the case of clots is a different matter. Suppose we resolve to turn out the clots, is there any harm in administering ergot before we begin the operation? Do we not gain time in that way and prevent the rapid formation of other clots, remembering that from ten to twenty minutes will elapse after ergot is given by the mouth before its physiological effects are manifested?

While the child is yet *in utero*, the author fears retraction of the cervix; while the placenta is there he fears its retention; with clots he argues in the same way; while in placenta prævia it is far inferior to the tampon. Now, there may be many dangers precipitated by ergot, and as a substitute for the forceps it is certainly a failure, but one who has for many years given ergot freely as the head passes the perineum, and given it as a matter of routine, without finding any difficulty with the placenta, who has given it often before beginning the effort to turn out clots

from the uterus, and has had no difficulty, feels that the danger of the drug is somewhat exaggerated. The editor gives place to diverse views of various American writers on the subject, and himself inclines to the belief that the author is about right. E. W. W.

CYCLOPÆDIA OF OBSTETRICS AND GYNÆCOLOGY: OBSTETRIC OPERATIONS; PATHOLOGY OF THE PUERPERIUM. Being Vol. IV. of a Practical Treatise on Obstetrics. By Dr. A. Charpentier.
New York: Wm. Wood & Co., 1887.

This last volume of the four comprised in the practical treatise on obstetrics is perhaps the most practical and useful. With its profuse illustrations and its aim to cover the whole ground fully, the student will turn to it for a full exposition of the operative treatment of labor. The subject of version in the early chapters is both well described and well illustrated. The second chapter is devoted to the forceps. We have pictured the usual row of obsolete instruments, beginning with Chamberlen's. "Classic forceps" are next described, and at last we come to traction forceps, the development of which is carefully studied from the first instrument of Joulin to the new tractor of Joulin and Poulet, the latter of which is depicted "in action,"—a very proper expression all will agree after seeing the illustration. The Tarnier forceps is studied from its first rudimental form, or rather idea, up to the complete and valuable instrument of today, with its mechanism and the application of its principles to other well-known forceps. The author's "Indications for the Forceps" are sound and progressive. The "conditions requisite for the application of the forceps" are given as four,—a dilated or dilatable os, ruptured membranes, the head presenting, the pelvis not too contracted. But the author does not exclude the applications of instruments to the pelvic extremity. When the hand cannot reach the feet, it is justifiable and its "dangers much exaggerated." If we have a rigid cervix and great urgency, "we must without hesitation nick the external os in several places." The author advises version when the head is above the brim in a small pelvis, but forceps in a deformed one. The only comment the reviewer would make on the section of the book just noticed is, that if the author wrote his views in plain language the translator has failed to make them perspicuous, and the student taking this chapter as a guide must use considerable discrimination.

In applying the forceps the author advises

the French method, to the sides of the child's head, as opposed to the English and German, of applying the blades to the sides of the pelvis. Of course, with the head transverse, this method is valueless, and the other nearly so, and in such cases he applies the instrument with its blades "obliquely both to the head and pelvis" as a compromise measure.

Forced locking of the blades he is absolutely opposed to, or even "rotating them inversely to bring them to the same plane." "The rule should be to begin over, a hundred times if need be." The author treats largely in his description of instrumental extraction of the Tarnier forceps, and its relative advantages and disadvantages. He says of it, p. 107, "It is in particular in the cavity and at the inferior strait that the forceps can be used to the greatest advantage, and here the classic forceps can exert traction better in the axis of the pelvis;" and "at the superior strait the classic forceps and that of Tarnier present the same disadvantages,"—they "cannot make traction backwards." "Do we make traction" with the Tarnier "in the pelvic axis?" he asks. "Not at all at the superior strait, only a trifle in the cavity and at the inferior strait, since it is impossible to know the mathematical axis of the pelvis." This is sad, since these forceps are supposed to do this very thing. He adds, however, "Nevertheless, the younger French practitioners are daily making greater use of the Tarnier instrument," and in England "Alexander Russell Simpson has adapted the principle of axis traction to Simpson's forceps." It was not without cause that we considered the chapter as mixed and misleading. The above quotations will explain the author's state of mind, but will furnish but a poor guide to the inquiring student. The editor, however, comes to the rescue, and condemns the author's views as quite different from his own and those of many others in this country. Indeed, a very brief experience of the Tarnier forceps will, we think, satisfy any intelligent observer that they make backward traction vastly better than forceps of the older pattern. Let the experimenter, after applying them, try making traction with the hands, or with ordinary forceps, and then with the tractors, and see under which effort the most progress is made. Oftentimes a head absolutely unyielding in the former case will, when the tractors are used, descend easily and rapidly.

Chapter v. is upon "the Induction of Premature Labor." The author, after studying the indication for this procedure, describes carefully the many methods advocated by many

men. He prefers over all that of Krause, inserting a gum elastic bougie between the membranes and uterus, and leaving it *in situ* until dilatation is sufficient.

The remaining chapters are on Cæsarian section, Porro's operation, and embryotomy. The last part of the volume, Part VIII., which finishes the work, is upon the "pathology of the puerperium," and contains chapters on the "pathogeny of puerperal fever," "forms of the disease," "pathological anatomy," "prognosis" and "treatment of puerperal diseases." In the last chapter we find the remark made that it appears from experience "that women who have resided in maternities a certain length of time before delivery are less likely to contract puerperal affections than those who enter in labor or a few days before." The former are acclimatized. Throughout the chapter the author's idea of disinfectant processes is confined entirely to carbolic acid. This the editor explains by saying that at the time of writing corrosive sublimate had not yet replaced carbolic acid. Between author and editor the reader will find the whole question carefully discussed, and forming a valuable and proper conclusion to a work of this character. While in many points the author throughout the four volumes is at variance with what is almost axiomatic among us, and in agreement with much that we consider obsolete and outgrown, yet this is not because modern methods and modern thought are unknown to him, but rather because he prefers the old ways to the new, though giving the new generally a fair field, and leaving the reader to decide adversely to himself if he choose. For the book is modern, after all, and out of it may be gleaned many a valuable suggestion and much useful wisdom, which elsewhere might be sought in vain.

E. W. W.

HANDBOOK OF MATERIA MEDICA, PHARMACY, AND THERAPEUTICS. By Saml. O. R. Potter, M.A., M.D. Philadelphia: P. Blakiston, Son & Co., 1887.

The author has aimed to embrace in a single volume the essentials of practical materia medica and therapeutics, and has produced a book, small enough for easy carriage and ready reference, large enough to contain a carefully-digested, but full, clear, and well-arranged mass of information. He has not adhered to any pharmacopœia, as is the case of certain recent manuals, thereby limiting his work, and in this day of new remedies causing constant disappointment, but has brought it up to date in the most satisfactory

way. No new remedy of any acknowledged value is omitted from his list. Under each the section on physiological action and therapeutics has been written with care. Part I. of the volume, devoted to materia medica proper, ends with an elaborate chapter on the "Classification of Medicines." Part II. is devoted to "Pharmacy and Prescription Writing," and contains information which it is very hard to acquire elsewhere than by practical work and precept. Part III., on "Special Therapeutics," consists in an alphabetical arrangement of the diseases and diseased conditions, each being followed with a concise summary of the lines of treatment which have been found of value. This part, while it may strike some as tending to create superficial therapeutists, will be of great service to the already experienced, stimulating the tired brain, and easily recalling forgotten drugs and forgotten methods. In the enumeration of drugs suited to different disorders a very successful effort at discrimination has been made, both in the stage of disease and in the cases peculiarly suited to the remedy. It is no mere list of diseases followed by a catalogue of drugs, but is a digest of modern therapeutics, and as such will prove of immense use to its possessor.

E. W. W.

HOW TO STRENGTHEN THE MEMORY, OR NATURAL AND SCIENTIFIC METHODS OF NEVER FORGETTING. By M. L. Holbrook, M.D.

New York: M. L. Holbrook & Co.

How unpleasant to never forget! how annoying to never remember! and that forgetfulness is as useful at times as memory the author admits in his chapter on "The Art of Forgetting." Injuries, for instance, and injustice, disgusting sights, all the unpleasant and little disagreeables of life, are so much better forgotten. Men become pessimists by remembering, optimists by forgetting them, yet a good memory is a very desirable thing. The mind evidently may be well stored, yet wellnigh useless to its possessor if good memory be absent, for memory is the faculty which brings out of the storehouse of the mind what we need, when we need it. The author asks, "How do we remember?" and casts a fine sneer at the physiologist, who speaks of the brain "registering impressions." Yet what else can it do? Did the author ever ponder upon that wonderful toy the "speaking phonograph," and see how it records so minutely and from so little apparently, and reproduces so much? How the dent in the foil, so

nearly invisible, yet possesses the power of throwing back a volume of sound modulated, articulated, and with the recognizable tones of the speaker?

What every one desires is a practical memory suited to his own needs. The memory of the soldier would not suit the historian; the memory of the lawyer might fail the business man. Now, the author thinks that if one follows the lines of study which he indicates he may be reasonably sure of a fairly good working memory.

The question of capacity is one of great practical interest. Does the overwrought child use up and fill with useless things its storage capacity in early life, leaving less room for more important things afterwards? This is a question for the educator, but the educator will never solve it if left to his own devices, for a sort of judicial blindness settles upon him when he begins his work, and deepens as his life goes on. The teacher never sees the overcrowded child, never realizes what the author believes, that fatigue impairs the memory, believes evidently that memory itself is the grand central faculty of mind, and views the parrot with admiration, as the type of all that is good and great in humanity.

Many parts of this book will prove interesting, even to those whose memories are excellent, and who need no additional training. The pages abound in brief but pungent sentences, and indirectly touch upon a multitude of topics of interest. E. W. W.

EVACUANT MEDICATION; CATHARTICS AND EMETICS.

By Henry M. Field, M.D., etc.

Philadelphia: P. Blakiston, Son & Co., 1887.

No matter how great progress man may make in the vast future, he will probably always require some cathartic. Noses may wither away under catarrh, eyes fail from too early and steady use, ears become dull under the incessant clatter of civilized life, teeth vanish as food becomes universally peptonized and malted, but the bowels will remain. The finer the food, the more constipated they will become. The more the brain acts the less will they. Mechanism may make mechanism, and arms may wither, rapid transit may substitute natural locomotion, and legs may dwindle, but still will the compound cathartic pursue its meandering way, and castor oil its sinuous track. He who would prepare for the practice of the future must study cathartics. Purgation will some day be the grand specialty.

In preparing for that day, such books as Dr. Field's "Cathartics and Emetics" are invaluable. The graduate of a day imagines himself skilful in compounding a pill, the aged practitioner considers himself a master of purgatives, but let them read the work of a real master and blush, for in this little book is gathered together all peristaltic lore. By conning its pages one can learn just what purgative to use and just when to use it, the danger, the safety of each, the power and the peril of combination. It is by such practical knowledge of what some call little things that the physician prospers, while the mental giant, the grand, highly-educated product of modern medical study, who has attended the schools of Europe and America, has seen everything and done everything, pines in solitude behind his silver sign and withers day by day. E. W. W.

A TREATISE ON DISEASES OF THE SKIN, WITH SPECIAL REFERENCE TO THE DIAGNOSIS AND TREATMENT, INCLUDING AN ANALYSIS OF ELEVEN THOUSAND CONSECUTIVE CASES. By T. McCall Anderson, M.D., Professor of Clinical Medicine in the University of Glasgow, etc. With colored plates and numerous other illustrations.

Philadelphia: P. Blakiston, Son & Co., 1012 Walnut Street, 1887.

The oft-felt need of a full, complete, and yet not too voluminous work on diseases of the skin seems to have been well met by the author of this work. Adopting the classification of Willan, there is given a concise yet vivid description of the various primary and secondary lesions of the skin. Under the heading of classification he divides skin-diseases into the two great classes of functional and organic, and gives an analysis of ten thousand consecutive cases met with in hospital practice. After which we find a further analysis of one thousand consecutive cases met with in private practice. We may remark that in the former, out of ten thousand we find two thousand five hundred and twenty-seven of scabies, while out of the one thousand private cases but forty-four.

Under pruritus the author mentions the pruritus hiemalis of Duhring, a disease which seems to have been universally attributed to the cold weather of cold climates. "It appears to result from cold," the author says, and yet it may possibly result rather from the means taken in cold climates to avoid cold. In so many cases it seems to appear with the putting on of warm woollen garments next the skin and disappear when they are discarded, and with others to be always temporarily re-

lieved by a warm bath; that in the latter it may possibly be due to the cessation of daily bathing. Certainly in most cases the skin will be found dry, not scaly, but smooth and dry, almost polished, and the perspiration tardy in appearing. These cases are often relieved by directing them to wear a thin muslin garment under their winter flannels, next the skin.

In Addison's disease the author describes his own treatment by antistrumous remedies, having noticed how frequently in autopsy the suprarenal capsules were the seat of a scrofulous affection. These measures, combined with blisters over the renal region, have in his hands been of great service in arresting the defect of coloring-matter, clearing up the skin, and improving the general health.

In hirsuties, electrolytic destruction of the hair-follicles offers the only useful means of treatment.

In alopecia areata the author coincides with those observers who have failed to discover a parasitic element, while admitting that the disease "presents all the other characteristics of a parasitic affection." He therefore regards it as a nervous affection. Turpentine and ammonia are the two remedies on which the author relies most.

Under canities we find described a new hair-dye, accidentally discovered by the author, which consists in the use of a solution of bichloride of mercury, gr. ii to \mathfrak{z} i, for a few days, and following with one of sodium hyposulphite, \mathfrak{z} i to \mathfrak{z} i, a few applications making the hair nearly or quite black, without staining the skin or clothing.

The chapter on "Eczema" covers one hundred and nine pages, and is extremely valuable. While believing that in many cases the digestive disturbances so common in eczema are but manifestations of one and the same cause, the author does not deny that eczema may be caused by digestive derangement, and in these cases "the parts most frequently attacked are, as Hebra has pointed out, the face, lips, anus, and hands." Deficient excretion he considers a fruitful cause of the disease, as is also the gouty diathesis and the rheumatic. With regard to the treatment of this affection, the author says, "With some exceptions there are few diseases more curable than even the severe forms of eczema," and "there are many ways of arriving at the same goal." A combination of local and constitutional treatment is generally the best. A long course of purgatives and aperients is

injurious, "except in cases entirely dependent upon digestive derangement." Purgatives may apparently cure many cases, which reappear when they are stopped and flourish "again as luxuriantly as ever." Mercurials are useful in liver torpidity. Small doses of gray powder, combined with rhubarb and salicine or quinine, or sulphate of magnesium, combined with a preparation of iron. When the patches of eczema are indurated, corrosive sublimate in small doses, combined with basle, is sometimes useful, but mercurialization is to be avoided always. The sulphur treatment is less valuable than the mercurial. In functional derangement of kidneys diuretics are useful.

The general internal treatment "radiates in two directions,—for the robust, for the anæmic and strumous." In the latter iodide of iron and cod-liver oil, phosphorus, good food, stimulants, cod-liver oil inunctions. In the robust cases, or those apparently so, local scarification and cupping may be useful, especially if the lower extremities are affected and the patches acutely inflamed. Of nerve-tonics, strychnine and arsenic are the useful ones. The author is not one of those who discard arsenic, like a recent authority, who considers it useless, but he limits its sphere to those who can take it without deranging the digestive organs, without the aggravation of itching and heat, which often occurs in acute eczemas, and would withhold it if herpes occurs until the rash has disappeared. An adult may take 3 to 5 minims thrice a day, and gradually increase. Aggravated irritation of the eyes and puffiness of the face, especially if anorexia, pains in the head and stomach, nausea, and bronchitic irritation appear, are good reasons for diminishing its dose. He quotes Dr. Jas. Begbie, who says, "Arsenic is a remedy too often suspended or abandoned at the very moment when its curative powers are coming into play." There is a great liability to take cold while taking arsenic, and a tendency to the development of bronchitis. During or after meals is the time to take it: in bitter infusion when the stomach is weak; with a little morphine when it provokes diarrhœa. As the disease yields, gradually diminish. The author advises us not to tell our patients that they are taking arsenic.

Alkalies are useful when the patient is addicted to stimulants, and constitutionally inclined to rheumatism or gout. The carbonate of ammonium, in doses of from 5 to 40 grains, three times a day, is the author's favor-

ite. Tar, internally, in doses of from 2 to 40 drops, given in syrup or pill. When given in drops, the author adds to it one-eighth part of rectified spirit, to enable it to be dropped.

The local treatment: first remove all crusts by oil, by poultice, or by vulcanized india-rubber dressings. When itching, swollen, and irritated, dust with the mildest powder, talc, starch, zinc oxide, calcium, or white fuller's earth. Add to any of these a little powdered camphor to "allay the burning heat." Many formulæ are given for soothing ointments. For the chronic condition, potash applications, the various soaps, cold water, always using soft water. For itching, lotions of dilute hydrocyanic acid. In regard to tarry preparations, the author considers them contraindicated when there is any necessity for soothing applications. Tarry lotions, like the inunction of green soap with tar, he considers best of all. Mercurial applications he believes to be of great service; sulphurous preparations seldom are. The oleates evidently find favor with him. The dressings of vulcanized rubber, while occasionally worse than useless, are generally of very great benefit. They also may be used with the various other modes of treatment. For disease of the "ears, brow, nape, and extremities" an ointment of chrysophanic acid is recommended, and for limited eczemas blistering has no rival. The blister employed by the author is a solution of mercurial bichloride 3i to alcohol 3i, or cantharides.

The author's treatment for erysipelas consists mainly in feeding. Quinine and iron he uses as in any other disease, if called for.

In urticaria, where the cause cannot be discovered and avoided, and the eruption continues to crop out, the author thinks that atropine and potas. bromid. pushed to physiological effect are next to be depended on.

We have given somewhat extensively the author's treatment of a few forms of cutaneous disease, but space would fail to mention more. The reader, however, will be attracted more and more by the practical tone of the book and by the author's evident mastery of his subject. We can think of no better work for the practitioner on the subject.

E. W. W.

CHEMICAL LECTURE NOTES. Taken from Prof. C. O. Curtman's lectures at the St. Louis College of Pharmacy. By H. M. Whelpley, Ph.G., etc.

St. Louis, Mo.: Published by the author, 1886.

These notes were evidently first taken for "Quiz" purposes, but, enlarged and perfected,

form the basis for an excellent course of lectures on chemistry. They mirror the actual class and class-room surroundings, the audience, the lecturer, the successful eye-taking experiments. They are well illustrated in regard to the apparatus employed, and would furnish an excellent text-book for a novice in lecturing. To the student these notes will prove useful, and from their form may impress themselves all the more vividly upon the memory.

HANDBOOK OF DISEASES OF THE EAR, FOR THE USE OF STUDENTS AND PRACTITIONERS. By Urban Pritchard, M.D. Edin., F.R.C.S. Eng., Professor of Aural Surgery at King's College, London, etc. With illustrations.

Philadelphia: P. Blakiston, Son & Co., 1886.

A good, compact, and reliable handbook of this kind is always useful, and can always find a place, provided its author knows his subject well and inspires confidence. Too many manuals are the work of babes for babes, the first flight of the medical fledgling ere he soars to more ambitious work. This book, however, is not the production of a novice, and is extremely good, simple, and plain to understand, has good illustrations, as far as they go, can be carried in the pocket, and tells, after all, about all there is on the subject worth while knowing.

E. W. W.

DE L'ENDOMÉTRITE ET DE SON TRAITEMENT. Par J. A. Doléris, Ancien Chef de Clinique d'Obstétrique et de Gynécologie de la Faculté, Accoucheur des Hôpitaux, etc. Paris, 1887.

This brochure of seventy-two pages is a reprint of a series of articles published during the past winter in the *Nouvelles Archives d'Obstétrique et de Gynécologie*, describing M. Doléris's treatment of endometritis.

The author considers the most frequent cause of this disease to be septic infection at parturition or abortion. He does not consider uterine enlargement under the names subinvolution, chronic hypertrophy, hyperplasia, engorgement, and congestion to be the results of a true endometritis; but, holding that there is no inflammation without septic infection, he considers a septic process whose seat is the endometrium, and whose effects are manifested by structural changes in this and related tissues, to be endometritis. Metritis is described as a sequela, and the persistence of endometritis is explained by its analogy to chronic posterior urethritis. The implication of all the tissues connected functionally and anatomically with the uterus, the occlusion of the cervix, which favors reten-

tion of septic matter and produces spasm, and the displacements frequently occasioned, are clearly set forth, as are also the difficulties of spontaneous cure and the many causes militating against recovery. For the restoration of the normal condition of the endometrium he considers local treatment of the uterine surface and dilatation of the cervix indicated. The names and results obtained by those who have used the curette are reviewed, and the writer indicates the grounds upon which he bases his selection of an instrument for a particular case. He follows curetting by the use of the *ecouvillon*,—a spiral brush of varying degrees of stiffness, which he dips in glycerin-creasote, 1 to 3, and with which he cleanses the uterine cavity thoroughly. Antiseptic precautions, the after-use of iodoform and glycerin tampons, complete the treatment.

Especial stress, in the after-treatment, is laid upon maintaining thorough antiseptics in the vagina for a considerable time.

Dilatation of the cervix uteri is not considered indispensable in every case, but is thought very often highly advantageous and indicated. Rapid and gradual dilatation are described, and the advantages of each. For the disinfection of tents and other dilators for gradual dilatation the author has found immersion in a saturated solution of iodoform in ether sufficient. As an intra-uterine antiseptic and escharotic pure creasote in glycerin, 1 to 5 or 1 to 3, is preferred above all others; it is claimed that microscopic examination of tissues acted upon by creasote shows the preservation of their nuclei and their dialysant properties. In feeble solutions, 1 to 10 and weaker, creasote may be used as a general antiseptic. The results of this treatment in three hundred and thirty-nine cases are reported as follows: Endometritis of moderate severity, two hundred and eighty cases; chronic endometritis, with polyoid condition of the endometrium, forty-three cases; recent decidual endometritis, with retention of placenta or membranes, sepsis postpartum, sixteen cases.

The treatment was commenced from three to twelve months after the beginning of the disease; in no case longer than fifteen months.

In the greater proportion of cases the use of the *ecouvillon*, or brush, with creasote, 1 to 10 and stronger, was the treatment; other measures were used as indicated. The author claims that all the cases treated were cured without accident.

E. P. D.

Correspondence.

PARIS.

(From our Special Correspondent.)

Tuberculosis propagated by Hens.—Common justice requires us to mind the health and welfare of the domestic animals whose natural instincts we have perverted to our own purposes; but neglect of such plain duty seems to be often followed by prompt punishment. That several diseases may be spread by the milk of unhealthy cows is a fact now well established; but hens, also, it appears, are apt to catch from man certain maladies, and to propagate them.

Dr. Lamallerée, at the Congress of French Scientific Societies, just held in Paris, related an instance of contagion which derives its chief value from the completeness of the history and clearness of the deductions inferable therefrom. In 1872 a young man, liberated from military service after he had been a prisoner of war, came to a small village, where he settled as a woodcutter. Although suffering from bronchitis, he married a young girl of the locality, but soon after he was taken with hæmoptysis, and died within a year after his marriage, leaving a child, rather delicate. The widow, who had been a strong, healthy girl, gradually became consumptive, so that in 1885 she had cavities in her lungs, profuse expectoration, and now she presents all the symptoms of an approaching end. Dr. Lamallerée was recently called upon to see a neighbor of the widow just mentioned, a young woman whose antecedents could not lead him to suspect tuberculosis. The patient, nevertheless, was found to suffer from incipient phthisis. After long questioning, it was ascertained that within some four months she had eaten eleven chickens bought from her neighbor, and as her strength was failing she had roasted them very slightly, hoping to thus get more nourishment. From her house the doctor stepped into the widow's, whose case he knew well, to ascertain how the hens were fed, how they had died, and whether they were in the habit of absorbing spittles. On this point he received prompt satisfaction. As he was walking into the house he heard the widow have a fit of coughing, and immediately a legion of chickens ran in, as they are wont to do when hearing the voice of the one who feeds them, and began to fight around the bed for the consumptive's spittles. One of the hens having died the same morning, Dr. Lamallerée took it home for examination, and

found in the animal seventeen soft tubercles ; the liver was honeycombed with them, and the liquids contained many bacilli. In the foregoing case three steps of the contagion can distinctly be traced,—1, from man to man ; 2, from man to animals ; and, 3, finally, from animals to man. Before dismissing the subject, a word may be said on another new treatment of tuberculosis, or, rather, a new mode of applying an old medication,—namely, *inhalations of hydrogen sulphide in phthisis*. Dr. Frébault, of the Toulouse Faculty, prefers for obvious reasons the natural gas to that produced in laboratories, and direct contact with the lungs to any other method. He has established at the Luchon Hot Sulphur Springs, directly over the natural outlet, large inhaling-rooms, with appropriate air-circulation, in which patients may breathe the medicated vapor for any length of time that may be considered most beneficial by the medical attendant. It would be out of place here to relate the cures effected. But it is certain that with natural gas there is no danger of arsenical or other contamination to be feared from laboratory products ; the patient has, besides, the benefit of pure country air, change of diet, etc. It must be conceded, also, that the method is one easily applicable to all hot sulphur springs, but the remedy is one that can only be afforded by rich people. The generality of patients may not be in such poor circumstances as the two women mentioned by Dr. Lamallerée, but the number of those who can visit watering-places is necessarily limited.

New anæsthetics are constantly brought to notice, and it must be admitted that those in present use leave room for improvement in more than one respect. At a recent meeting (May 31) of the Academy of Sciences Messrs. R. Dubois and L. Roux presented a memoir on the merits of ethylene trichloride as an anæsthetic. The substance in question, for which they use the name of *methyl-chloroform*,* is a chlorine derivative of ethylene, while ordinary chloroform is a methylene derivative. Its chemical formula is CH_2-CCl_3 , and its ebullition-point 75°C . (167°F .). Methyl-chloroform was, a few years since, tried by Rabuteau on frogs and guinea-pigs, and dismissed as unsatisfactory after some experiments which Messrs. Dubois and Roux consider insufficient and far from convincing.

* This term appears to be a misnomer, and *ethyl-chloroform* more appropriate ; nevertheless, as the memoir relates not to the chemical but to the medical properties of the substance, the name has been retained.

They have experimented with dogs, and are of opinion that the chemical has certain advantages that might prove very useful in human medicine. They are as follows : The boiling-point being higher than that of ordinary chloroform, it saturates less rapidly the air breathed by the subject operated upon. The lower ebullition-point of chloroform, 61°C . (141°F .), is one of the most frequent causes of sudden deaths, as experiments prove that a dog will be killed within five minutes by a mixture of twenty-five per cent. of chloroform vapor and seventy-five of air, while eight per cent. of chloroform may be tolerated by the animal for a whole hour. The odor of the proposed anæsthetic, when pure, is sweet, and not penetrating or suffocating like that of ether and chloroform ; it is not irritating, like chloroform, to the inconvenience of both the patient and the surgeon and assistants, and, unlike ether, burns only with difficulty. The experiments made so far with animals are very satisfactory, and Drs. Dubois and Roux hope to be soon able to complete the investigations necessary before they try the anæsthetic in human medicine.

A question long controverted, is whether *aniline derivatives are poisonous or not*. At first they were decided to be harmful. A little later on, as the poisoning accidents were shown to be due to arsenical impurities, coal-tar colors were simply declared dangerous, owing to the possible contamination. And now that the matter has been investigated closer, poisonous chemicals being avoided in the manufacturing processes, a whole class of the modern colors has been proved to be harmless, while others are only thought to be irritating. Messrs. S. Arloing and P. Caze-neuve have contributed a very elaborate and careful disquisition on a subject which may now be considered as settled, or nearly so. A previous investigation made by M. Caze-neuve, in connection with M. Lépine, had led them to the following conclusions : 1. Although binitro-naphthol is toxic, as is picric acid, its congener, yet its sulpho-conjugated compound N S yellow (sodic conjugated binitro-naphthol yellow) is harmless. 2. Safranin and methyl-blue, without being exactly poisonous, are not quite harmless, as they irritate the intestinal tube. 3. Solid yellow (sodic sulpho-conjugated amido-azo-orthotoluol), roccellin red, Bordeaux red B, purple and ponceau R, orange I (all sulpho-conjugated derivatives of naphthol), and sulpho-conjugated fuchsine, are completely harmless for man, either in good health, or sick even

from Bright's disease. It will probably be noticed that all the harmless colors are sulpho-conjugated sodic combinations. The more recent investigations undertaken by Messrs. Arloing and Cazeneuve, and related at length in the *Revue de Physiologie*, were very searching and extensive. Having examined more especially the *roccellin red* and *Bordeaux red*, they have come to the conclusion that the two colorings in question are not toxic, except when given in very large doses. For instance, a pig took as much as 725 grammes (about 24 troyounces) within one hundred and forty-five days, 5 grammes of *Bordeaux red* being administered daily in the food; the animal thrived and grew fat,—as usual with the porcine species when well fed,—and after death presented no lesion, renal or hepatic, of any sort. Dogs and asses were also experimented with, minute records of the cases being kept, and all the animals proved equally unaffected. Even when the colorings were injected directly into the veins, no intoxication proper could be observed; indeed, some common salts, like sulphate of potassium, for instance, which are considered harmless enough, are more dangerous than sulpho-fuchsine in intravenous injections. As regards the effect on human subjects, a man, aged 30, suffering from myelosclerosis, but with sound urinary organs, took as much as 6 grammes ($1\frac{1}{2}$ drachms) in one day of *roccellin red*; three nephritic patients took 1 gramme (15 grains) of it a day, for eight days, all without any noticeable effects. From the foregoing, Messrs. Arloing and Cazeneuve conclude that, considering the infinitesimal quantities necessary for coloring purposes, the substances in question offer no danger to public health. The legal toleration of 2 grammes of sulphate of potassium to the litre of wine after plastering, is certainly more harmful, and it is proper that legislation respecting aniline colors should be revised.

Pellagra is becoming a sort of national calamity in Italy. It is reported to be now very violent and deadly in Lombardy and Venetia. As customary in such cases, the facts find their way in the foreign medical press, while at home they are carefully kept from the public. The disease is admittedly caused by the inferior quality of the bread, which is heavy, coarse, ill-made, badly baked, and generally supplied but once a fortnight. Within five years eighteen new hospitals have been created for the treatment of *pellagra*, but thousands of poor patients are left without medical attendance of any sort. And

now, to make things worse, the Italian government is preparing a law avowedly intended to impede the importation of American breadstuffs, the inevitable effect of which will be to enhance the price of wheat flour. But a bitter feeling exists against American prohibitory tariffs, and retaliation comes before humanity.

PARIS, June 22, 1887.

APOMORPHINE IN CROUP.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—Croup in young children is such a common disorder that it is generally treated by mothers and nurses with domestic remedies used by *their* mothers or grandmothers before them. It is only when the case becomes alarming and beyond their power that the physician is sent for. Last winter I was called out at night on several occasions to attend such cases. Knowing the valuable expectorant properties of apomorphine, I determined to give it a faithful trial. Dissolving $\frac{3}{8}$ gr. (pellet form) in six teaspoonfuls of water, I administered a teaspoonful every five or ten minutes until emesis resulted. The second or third dose usually did the work. Where the child was past swallowing it was administered hypodermically (of course in less water). I also found vaseline or clean lard or oil rubbed on the chest and throat a valuable adjunct. The after-treatment is of great consequence. Quinine in small doses, with pilocarpine or syrup ipecac, combined with the celery compound, usually filled the bill to admiration. I have lost all dread of croup now if I only have my pellets of apomorphine with me.

Yours truly,

ALEX. F. SAMUELS, M.D.

LA CROSSE, WIS., June 29, 1887.

SANTONIN-POISONING.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—In two numbers of the GAZETTE of the present year cases were cited in which serious poisoning was the result of the administration of santonin, having in each instance been given for the expulsion of worms. Will you allow me to add my mite on the subject? For one I am afraid of it, and only rarely use it. It so acts like a balky horse, which, after concluding to go ahead after a spell of stubbornness, will be as likely to smash

the carriage and kill the inmates as to quietly settle down into a respectable canter. The only certain thing about santonin in my hands is that it will poison the patient more or less, and throw the friends into the wildest frenzy. Fortunately, I have never lost a patient from its use. I never give more than 1 grain to a child, nor $2\frac{1}{2}$ grains to an adult, combined with senna or rhubarb, followed in each by the same dose some twelve hours afterwards, and again in the same time by castor oil commensurate with the age of the patient.

My first case of poisoning occurred in my early years of practice, before I had ever heard or knew that such a thing could happen from its use. The child (of 5 years) had violent spasms at short intervals for several hours, unconscious most of the time, and for several days could not see. Her pupils were widely dilated. For safety she was kept in bed, and finally was thoroughly restored, minus forty round worms.

Five years ago, in my dispensary practice, an old Scotchwoman came to my clinic for a cough and severe and constant pain for two years in her right side just below the belt. She was 60 years old, and had grown stout from "lunching in order to quiet the pain." Constipation had become habitual. I gave her some compound liquorice powder, to take a heaping teaspoonful night and morning, and when she reported again in a week's time she brought an open-mouthed bottle with two tape-worms complete, each measuring nearly two yards. Her cough had disappeared entirely. I then ordered santonin in 2-grain powders, with powdered senna, at an interval of twelve hours, and these followed by castor oil. In twenty-four hours her sight was almost destroyed; pupils widely dilated, with sensations as if about to fall, and spasmodic respiration. I at once ordered a large enema of warm water, which produced a very large stool, in which three tape-worms were found, altogether measuring a little over five yards. Immediately her sight returned, but for a week everything was of a deep green color. I had her continue one dose of the compound liquorice powder daily for another week, when everything gradually returned to the natural order of things. She passed in all nine tape-worms, their total length being forty-three feet. In the course of a year her weight was reduced from two hundred and sixty pounds to one hundred and seventy-five pounds, and she became, as she expressed herself, "perfectly well again." I would add that four tape-worms were swollen and in a macerated

condition. This was the only time that santonin ever aided me in my experience to expel tape-worm, and I have tried it frequently for this purpose.

Another case I had only recently. The lady had been voiding long round worms for several years, and she applied to me to rid her of them. I gave her $2\frac{1}{2}$ grains of santonin with 10 grains of powdered senna, repeated in ten hours, each time about an hour after a not very full meal. She grew deathly sick, vomited freely several times, was dizzy, and "out of her mind" for two days; had painful and watery stools repeatedly for three days, and from the first dose everything was the color of an orange; pupils dilated, and limbs quivering. There were no signs of any kind of worms. She recovered completely in ten days.

I regard santonin as a very dangerous remedy, whether prescribed by physician or layman. I am safer (my patients also) with calomel and podophyllin, or senna and spigelia. I have very much doubted my wisdom in using santonin in the case of my old lady, after starting her tape-worms with the liquorice powder.

Very respectfully,

ODELIA BLINN, M.D.

202 WARREN AVENUE, CHICAGO, ILL.

"LOCAL NUMBNESS."

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—In the June number of the *Columbus Medical Journal*, 1887, an article appears called "Waking Numbness." Local numbness is a better term, for the reason that in this New Mexican climate the trouble is a very common one, and particularly during the winter and spring months, and on account of the attacks coming on not only during the night but frequently and at any hour during the day. It does not, as a rule, trouble any one during the day when actively exercising. The circulation is not generally disturbed. Motion is not interfered with, at least not in ordinary cases. It seems most frequently to attack the arms; in the lighter attacks but one arm or one limb; it may attack any portion of the body.

The attacks vary in duration from a few moments to several hours, particularly when they come on at night. Although I have seen many cases, and hear of a great number, have not as yet heard of or observed any serious results follow the attacks. I have been on the lookout for more than five years for something

on this subject in the different medical journals which I have come in contact with, not finding the matter discussed until now. I believe I have seen cases where the tongue was attacked, but did not recognize the trouble at the time as this curious neurosis. I have seen at least two extensive and violent cases in this city, both married ladies. Males are not exempt, although I find it much more common among women and more severe. I concluded tonics and stimulants, with local friction during the attacks, would give the best results.

ALBERT E. EALY, M.D.

ALBUQUERQUE, NEW MEXICO,

June 23, 1887.

ANTIFEBRIN AS AN ANTIPYRETIC.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—Dr. Peter J. Martin in the May number of your GAZETTE has an article, with full tables of calorimetrical experiments, also tables of experiments on lower animals, of all the new antipyretics except antifebrin. I read this article with interest. Of late I have tried antifebrin with excellent result, it having a charming effect on my patients. I think it can well be classed with antipyrin and the other antipyretics. So far I think this drug an indispensable article in a physician's armamentarium. On the night of May 17, 1887, my partner was called to J. O., æt. 22, who was suffering from an attack of sporadic cholera morbus, vomiting, purging, and in much pain, and greatly prostrated. He was relieved by ordinary remedies, but for two or three days was weak and pale. The patient said he had eaten some wild honey near some yellow jasmine vines. Before he got strong and thoroughly over this attack he rode some distance in a buggy, and on returning home he got wet. On the afternoon of May 20 I was called to his bedside, and found patient's temperature 105°, tenderness over abdomen, and especially over ileo-cæcal valve, tongue coated, red around edges, and dry. He also experienced pain over lower part of right lung, with a dry, hacking cough; his bowels were loose also. My partner had prescribed quinine in 5-grain doses every four hours, with spts. terebinthinæ, 8 drops three times a day. When I saw him the first time he was in muttering delirium, wandering, etc. I did not change the treatment with quinine for two or three days, but increased the dose. Noticing an increase of head-symptoms, I discontinued the quinine

and ordered antifebrin in 5-grain doses, dissolved in hot water, sugar, and rye whiskey, about 3i altogether. I carefully watched the result, and was delighted with it. It invariably quieted the patient, and in two minutes by my watch he was dozing and in a good diaphoresis; the temperature was reduced on an average of about two degrees in a temperature of 104° or 105°. A pleasant slumber was produced every time it was administered, the action of the pulse was moderated and lessened in quickness. I noticed no depressing effect as I have seen with antipyrin. Antifebrin acted so charmingly in managing the temperature of this patient that later on I only gave it when the patient was restless and wandering in muttering delirium. Of course I nourished and stimulated all the time regularly. I tried, with a great deal of satisfaction to myself and benefit to the patient, Bush's Fluid Food, Bovinine, given with sweet milk. From the time I began the administration of the antifebrin I had very little trouble. The patient is now up and rapidly convalescing after about four weeks' sickness.

I have used antifebrin in several cases of teething children with loose bowels, restless, abdomen hot, and high temperature, where opium had been given to check the bowels. I gave the following prescription:

R Antifebrin, gr. xvi;
Hyd. cum creta, gr. x;
Liquorice powder, gr. xx;
Camphor, gr. xii;
Morphine sulph., gr. i. M.
Ft. in powder No. xvi.

Sig.—One every three hours in good whiskey and sweetened water.

These children have improved and been discharged.

F. W. P. BUTLER, M.D.

EDGEFIELD COURT-HOUSE, S. C., June 4, 1887.

Notes and Queries.

CROTON OIL.

It will be remembered that at an evening meeting in 1878 (*Pharm. Journ.* (3), viii. 705) MR. H. SENIER read a paper in which he reported that he had examined samples of English pressed croton oil that proved soluble in alcohol only in the proportion to the age of the sample, which was contrary to the recorded experience of Pereira and Redwood, and further that the portion soluble in

alcohol exhibited the vesicating property, while the insoluble portion appeared to be inert. Subsequently, in 1883, in another communication (*Pharm. Journ.* (3), xiv., p. 446) Mr. Senier gave his reasons for believing that while the vesicating property of croton oil resided entirely in the portion soluble in alcohol, the purgative property was confined to the portion insoluble. These conclusions not appearing satisfactory to Professor Kobert, the investigation was taken up by Herr von Hirschheydt, a pupil in the University of Dorpat. Upon the basis of the results obtained Professor Kobert now (*Chem. Zeit.*, April 6, p. 416) attributes the activity of croton oil, both as a vesicant and as a purgative, to crotonoleic acid, not to be confounded with crotonic acid, but an acid discovered by Buchheim in 1873, the formula of which has not yet been made out. This crotonoleic acid is said to occur in croton oil both in the free state, in which it is freely soluble in alcohol, and in combination as a glyceride. The glyceride does not possess poisonous properties, but the free acid acts as a powerful irritant to the skin and the intestines (purgative). According to Professor Kobert, the crotonolglyceride is attacked and split up like other glycerides by the ferments of the juices of the stomach, and the crotonoleic acid being set free then exercises its purgative influence. A similar result may be obtained by administering crotonoleic acid as a pill enclosed in keratin. Kobert is not of opinion, however, that the solubility of croton oil is dependent upon the proportion of crotonoleic acid it contains, but considers it to be connected with the age of the oil. Crotonoleic acid may be prepared by treating the portion of croton oil soluble in alcohol with a hot, saturated solution of baryta in a water-bath, washing the stiff white paste that forms with cold distilled water to remove the excess of baryta, and barium compounds with acetic, butyric, and tiglinic acid, removing by heat traces of water, and repeatedly treating with ether, which only takes up the barium oleate and crotonoleate. The crotonoleate is separated by dissolving it out in alcohol, decomposed carefully with sulphuric acid, and the solution containing the free acid evaporated.—*Pharmaceutical Journal and Transactions*, April 30, 1887.

POISONING BY PILOCARPINE.

DR. A. G. GLINSKY, of the Kharkov Alexandrovskaja Infirmary, reports (*Proceedings of*

the Kharkov Medical Society, Part I., 1886, p. 109) a case of poisoning by pilocarpine,—the first of its kind, according to the writer, in medical literature. A gentleman who had been in the habit of using a solution of pilocarpine as a stimulant for the hair swallowed a considerable dose of the fluid instead of a solution of quinine. About five minutes afterwards profuse perspiration, first of the face and then of the whole body, set in, together with salivation. These symptoms were speedily followed by dimness of sight, prostration, trembling of the limbs, a sensation of cold, noise in the head, and a general sense of confusion. On seeing the patient, about an hour after the accident, Dr. Glinsky found profuse, cold, clammy sweat in big drops on the face and body, coldness of the limbs, slight cyanosis of the hands and lips, a sub-normal temperature, pulse 84, full, dicrotic, respirations 14, profuse salivation, great contraction of the pupils, spasmodic shiverings, general restlessness, extreme weakness, and trembling of the lower extremities. The treatment consisted of the internal administration of tannin and emetics, together with the hypodermic injection of atropine ($\frac{1}{8}$ of a grain, given in three doses). A quarter of an hour after the injections a striking improvement took place; the perspiration ceased, the pupils became dilated, and tremor disappeared, and on the following day the patient was quite well. Dr. Glinsky adds that, in the period 1879–85, one hundred and sixty cases of poisoning by twenty-three toxic substances were admitted to the Alexandrovskaja Infirmary. In eighty-five of these, phosphorus matches supplied the poisonous material. He shows by statistics that this kind of poisoning finds an increasing number of victims in Kharkov every year.—*The British Medical Journal*, May 21, 1887.

A CHINESE ANÆSTHETIC.

A curious anæsthetic used by the Chinese has recently been made known by Dr. U. LAMBUTH in his third annual report of the Soochow Hospital. It is obtained by placing a frog in a jar of flour and irritating it by prodding it. Under these circumstances it exudes a liquid which forms a paste with a portion of the flour. This paste dissolved in water was found to possess well-marked anæsthetic properties. After the finger had been immersed in the liquid for a few minutes it could be pricked with a needle without any pain being felt, and numbness of the lips and

tongue were produced by applying the liquid to them.—*The Provincial Medical Journal*, June 1, 1887.

EXPERIMENTAL NEURITIS.

Hypodermic injections of ether are now so frequently employed, and with such good effect, that we are apt to forget that occasionally nervous lesions result from their use. Cutaneous anæsthesia, disorders of motility, and even serious trophic lesions have been observed, and the experimental researches of Arnozan and Salvat proved that the mechanism of these lesions was a peripheral neuritis. MM. PITRES and VAILLARD find, however, that some of the peculiarities of the action of ether on the peripheral nerves must have escaped the attention of the last-mentioned observers. We reproduce the salient points of this interesting communication. When an injection of half a cubic centimetre of sulphuric ether is made deeply into the cellular tissue which separates the muscles on the back of the thigh of a guinea-pig, there always results a paralysis of sensation and motion in the parts of the limb situated below the level of the injection. Generally the anæsthesia occupies the two outer toes and the outer aspect of the leg, but it may sometimes affect all three toes and the whole of the skin of the leg, probably because the injection has traversed the muscular interstices and attacked the crural nerve. After a few days these phenomena may be accompanied by œdematous swelling of the foot, ulceration of the toes and tarsus, falling off of the nails, etc. The anæsthesia and the paralysis are manifested immediately after the injection, and in a short time they have reached their fullest extent, and, once developed, they persist for several weeks, or even months, without either increasing or decreasing in severity. In order to study the mechanism of the action of ether, MM. Pitres and Vaillard have made a histological examination of the segments of the nerve situated above, below, and at the level of the injection of ether, and these examinations have been made on the sciatic nerve from animals after a survival of some hours, days, or several weeks. Above the zone of injection the nerve has always appeared absolutely normal; nothing like an ascending neuritis has been observed. At the level of injection the alterations varied according to the length of survival of the animal. When the nerve was examined some hours only after the injection, the nerve being teased

after maceration for twenty-four hours in a solution of osmic acid, and colored by picrocarmine, eosine, or hæmatoxylin, the myeline is found to have become blackened and rather different from the bluish-black tint of normal nerve-fibres. Further, the lateral fissures are no longer to be seen, the axis-cylinder and nuclei of the interannular segments are not distinct, and it seems as though the nervous elements had become altered in their chemical composition. If the animal be killed six, eight, or ten days after the experiment, the segment of affected nerve shows the same changes; it is only after the fifteenth day that the altered fibres begin to undergo notable modifications; the myeline breaks up, and is slowly absorbed. Below the level of the injection the nervous tubules proceeding from the nerve-trunk affected by the ether undergo the Wallerian degeneration, which is well marked on the fourth day. The ether is therefore regarded as causing an immediate necrosis of the nerve-trunk at the site of injection. This was also shown by an experiment in which the nerve was first divided at its exit from the pelvis, and on the same day ether was injected into the lower part of the thigh of the paralyzed leg. Wallerian degeneration was found eight days after in the nerve, between the point of section and that of injection, and also below the latter, but in the area of injection the nerve had not undergone degeneration; the myeline was continuous and confounded with the axis-cylinder, and there were no traces of nuclear multiplication. Other experiments showed that an injection of the sulphuric ether could arrest the Wallerian degeneration at any point in its career. The same facts hold good with nitric and acetic ethers for guinea-pigs, rabbits, and cats. Hydrochloric ether has less severe effects. Formic and valeric ethers have caused considerable local swellings and gangrene, thus preventing a proper examination of their action on nerves. The authors suggest that, in cases in which neurectomy or neurotomy is needed, injection of ether in the neighborhood of the nerve-trunk might serve equally well.—*The Lancet*, June 18, 1887.

GUACHAMACA TOXIFERA.

Guachamaca toxifera, one of the Apocynaceæ, will probably be restudied. SCHIFFER has already shown its superiority to curare in tetanus, rabies, and psychic surexcitations in general. It acts like curare in paralyzing the

peripheral terminations of the motor nerves, while having no action upon the sensory nerves or the muscles. Nevertheless, it is thought that the alkaloid guachamanine will have a much greater controlling power than curarine. One reason for the prevailing supposition that the alkaloids were chemically identical arose from the fact that they differed from other similar alkaloids in being wholly insoluble in absolute alcohol. According to recent researches by Böhn, curare has another alkaloid,—curine,—which is slightly soluble in water, and dissolves readily in alcohol. He says it, and not curarine, is the active ingredient of the aqueous solutions of curare. A curious fact about curine is that while it is wholly innocuous in doses of 5 to 10 mg., the product of its reaction with iodide of methyl is a poison of very great violence, even in minute doses.—*Pharmaceutical Record*, June 15, 1887.

ANTISEPTIC MIDWIFERY.

In a report by DR. K. INOIEFFS of the work done in the Lying-in Institution in connection with the Golitsinski Hospital in Moscow for the year 1886, the advantage of antiseptic midwifery, which is strictly carried out there, is evident, as out of 541 cases there were but 2 deaths. Some of the statistics, which are very carefully kept, may be of interest. The largest number of births occurred, as it is popularly believed they do, at night, 145 taking place between midnight and 6 A.M.; the numbers corresponding to the remaining three-quarters of the twenty-four hours being 131 from 6 A.M. to noon, 107 from noon to 6 P.M., and 144 from 6 P.M. to midnight. There were 14 abortions and 9 cases of twins; three births took place in the street. Of the remaining 501, 478 were vertex presentations, 15 breech, and 8 transverse. In 9 of the 14 cases of abortion the ovum was removed mechanically. When there was considerable hemorrhage and the os was not dilated, a hot vaginal injection of carbolyzed water was given, which was, as a rule, successful. Twice a plug, consisting of a long strip of cotton wool moistened with glycerin and iodoform, was introduced by means of the speculum, as much as possible being inserted into the cervical canal, and subsequently, when the os was sufficiently patent, the finger was introduced and the uterine contents removed. In one case there was a slight amount of perimetritis, and in two a single rise of temperature. In one

case a spatula was cautiously used to assist the irrigation, and once the contents were removed with the help of a sharp hook. Apart from cases of placenta prævia and abortion, there were 29 cases of hemorrhage, 6 of these occurring in primiparæ; 6 took place during the first and second stages of labor, the rest in the third stage and postpartum. The treatment adopted was, during the first stage, to plug, and when the os was sufficiently dilated to rupture the membranes. If there was rigidity of the os, narcotics were given. When uterine atony was the cause, massage, the application of ether to the abdomen, hot injections, and (after the birth of the placenta) ergot were resorted to. As to operations, episiotomy, or a double V-shaped incision of the perineum, was performed five times, no sutures being inserted afterwards. Twice the os uteri was incised; twice the prolapsed cord was replaced; perineal sutures were required in 20 cases. In the performance of the operation the most careful antiseptic precautions were taken; in 16 cases the union was complete. Retention of membranes required the introduction of the hand into the uterus once, but in 14 cases the placenta had to be artificially extracted, being completely adherent once, and partially so thirteen times. Labor was induced prematurely for contracted pelvis three times, twice by the injection of water at 28° R. (95° F.) through a tube passed into the cavity of the uterus, between the uterine wall and the foetal membranes; in the third case it was induced by the introduction of an elastic sound into the uterus. Podalic version was performed eleven times, and the forceps applied fifteen times. Craniotomy was performed twice.—*Lancet*, May 7, 1887.

DOSE AND USE OF SOME NEW REMEDIES.

Osmic acid: best administered in pill form (made up with Armenian bole). The dose is $\frac{1}{10}$ grain, which may be repeated several times a day. Used in epilepsy and sciatica. Agaricine: best administered in combination with Dover's powder. Dose, $\frac{1}{2}$ to $\frac{1}{4}$ grain. Used for night sweats. Aloin: from $\frac{1}{8}$ grain to $3\frac{1}{2}$ grains, in pill form. Antipyrin: dose, from 75 to 90 grains, divided into three portions, one of which is to be taken every hour. Bismuth salicylate: dose, from 5 to 7 grains, in pill form. In typhoid this dose may be doubled and repeated every hour up to ten or twelve times. Canabinone: from $\frac{1}{2}$ to $1\frac{1}{2}$

grains. Best administered mixed with finely-ground roasted coffee. Sedative and hypnotic. Colocynthin : used subcutaneously. The dose is from $\frac{1}{4}$ to $\frac{1}{2}$ grain. It may also be administered in pill form by the mouth, the requisite dose being from $\frac{1}{4}$ to 1 grain. Convallamine : internally, in pill form. The dose is from $\frac{1}{4}$ to $1\frac{1}{2}$ grains. Euonymin : best given in pill form, combined with extract of belladonna or hyoscyamus. The dose is from 3 to 10 grains. Nitro-glycerin is best given in alcoholic solution. The dose is from $\frac{1}{100}$ to $\frac{1}{50}$ grain, repeated several times a day. Rossbach prefers ether as a solvent. His formula for its use is as follows : dissolve $1\frac{1}{2}$ grains of nitro-glycerin in sufficient ether, and add the solution to a mixture consisting of 2 ounces of powdered chocolate and 1 ounce of powdered gum arabic. Mix very thoroughly, and divide into two hundred pastilles. Each pastille will thus contain $\frac{1}{80}$ grain of nitro-glycerin. Used in angina pectoris, and as a diuretic. Picrotoxin : in aqueous solution. Dose, from $\frac{1}{4}$ to $\frac{1}{2}$ grain. Used in epilepsy. Sulphate of thallin may be given dissolved in wine or water (with some corrigent). The dose is from 4 to 8 grains, or 1 grain every hour. The above is taken in part from the *Rundschau Leitmeritz*.—*The Australasian Journal of Pharmacy*, April, 1887.

MOMORDICA BUCHA.

At a recent meeting of the Paris Biological Society, M. A. DUPRAT made a communication concerning the physiological effects of the *Momordica bucha*, a cucurbitaceous plant of Brazil. The fruit of this plant is prescribed in dropsy. It may be given in injections composed of the watery extract of the fruit, or as a draught prepared from the fruit, after it has been macerated in brandy at 25° C. (77° F.). The injection acts as a drastic purgative, giving rise to severe pain, while the draught causes vomiting. *Momordica bucha* is used only by quacks, and is generally considered dangerous in Brazil. M. Duprat has made experiments with the extract obtained by hydro-alcoholic maceration of the fruit, diluted with water. From these he concludes that *Momordica bucha* acts as a local irritant, causing vomiting and diarrhoea, according to the dose and the manner in which it is administered ; it will cause death if taken in sufficiently large doses. The use of the drug by unqualified persons should be forbidden, but in the hands of medical men it may be very

useful as a purgative.—*British Medical Journal*, May 28, 1887.

COVERING WOUNDS WITH PLASTER.

At an inquest held in the Southwark Coroner's Court last Friday a point was brought out which is of some importance as bearing on the treatment of recent wounds. A school-boy running out of the school-gates fell and cut his forehead. The wound was strapped with plaster, and everything appears to have gone well for four days. Then shivering came on, and was followed by drowsiness deepening into insensibility, and death resulted two days later. After a post-mortem examination, it was decided that the fatal issue was due to blood-poisoning brought on by neglecting to cleanse and dress the wound, the plaster never having been removed from the time of its application. In commenting on cases of this kind one naturally allows somewhat for the possible effects of shock occasioned by the primary injury, which, without amounting to any gross lesion, might yet materially influence the final result. Be this as it may, however, enough has been shown in evidence to enable the coroner to assign to the death in question a more direct connection with the wound itself. The practice of plastering over recent cuts is very usual ; it is also one which in numerous instances has proved injurious. Apart from any question of blood-poisoning, indeed, the mere tension of retained discharges is an inevitable source of mischief where this custom is adhered to. The simple rule in surgery which provides for the free escape of pus where such is likely to form is one of which we need not remind any qualified practitioner. Accidents due to neglect of this rule are chiefly liable to occur when a wound has been treated either by the injured person himself or by a practising chemist. In such cases plaster is the first resource, and is apt to be used rather well than wisely.—*The Lancet*, June 4, 1887.

RICINUS COMMUNIS.

MR. THOMAS DIXSON draws the following conclusion from a paper with the above title published in the *Australasian Medical Gazette* for March and April, 1887 :

1. That the castor oil contains only a gentle aperient, while the castor seeds contain a violent, irritant one.
2. That the seeds should never be used as

is done in some countries by the "herbalist," as aperients, *deaths in great agony having been so caused.*

3. That in castor oil the aperient substance seems to be an oil or resin, and is certainly not the same body which we find in the seeds, after the oil has been extracted, as stated wrongly in text-books.

4. Nauseous material can get into the oil through it being heated, or through it being expressed from the *unshelled* seeds; for the unshelled seeds yield, to alcohol or ether, a brown substance of *ill smell* and acrid taste, but *not aperient*.

5. That if the seeds were shelled before the oil were pressed out cold, an almost tasteless oil is got, while the cake left behind would, if *cooked*, form an albuminous, pleasant article of food, especially of use in India, where *thousands of tons* of the cake are made yearly in a crude way. In *famine*, this would be a *valuable adjunct* to rice, seeing that meat is not eaten by Hindoos.

6. That the active principle is probably the very glycoside found in the seed, which, through a slight change in chemical composition (hydration perhaps), loses its activity (*cf. convolvulin*, which readily changes when heated in presence of alkalies to the inert convolvulinic acid).

The leaves of the castor plant have been long used locally for encouraging lactation. Mr. Dixon was unable to obtain any traces of an active principle, either aperient or otherwise, from the fresh leaves; possibly the benefit may be due to their being large, soft, and pliable, and so suitable for covering the surface well and closely, and encouraging local warmth as non-conductors.

THE LATEST CURE FOR CONSUMPTION.

The recent observations of DR. KOLISCHER upon a new method of treating tuberculous disease of joints, which were described by our Vienna correspondent last week, appear to have excited considerable attention. The method, based on the fact that tubercle deposits do sometimes undergo spontaneous "cure" by calcification and fibroid changes, was an endeavor to excite such retrogressive change artificially. The results obtained in the few cases at present thoroughly treated were certainly striking, and were declared by Professor Albert to surpass any other plan of treatment yet in vogue. It is now said that Dr. Kolischer contemplates applying the

same method to the treatment of visceral tubercle, and once more the world is agitated by the alleged discovery of a "cure for consumption." We would counsel a little patience before accepting even the possibility of being able to artificially arrest the progress of pulmonary phthisis by the administration of acid phosphate of lime or any other salt. At the same time, we would by no means discountenance a fair trial of any plan which, as in this case, is based on rational grounds. Perhaps between the varied efforts to discover germicidal agents on the one hand, and drugs to render the tubercular neoplasm obsolete on the other, we may one day arrive at some panacea. There is not much, however, in the recent history of the treatment of phthisis to render us very sanguine of such a result being attained.—*The Lancet*, June 4, 1887.

THE EFFECTS OF RESORCIN.

From his experience as detailed in the *Journal of Cutaneous and Genito-Urinary Diseases* for June and July, 1887, DR. G. T. JACKSON draws the following conclusions:

Resorcin is an irritating substance for use in eczema, though at times it may prove very efficient in chronic cases where active stimulation is indicated. It exerts a powerful absorptive effect on new cell-infiltrations. It is a useful addition to our list of remedies for the treatment of epitheliomatous lesions where surgical procedures are contraindicated from any cause.

ASTHMA TREATED BY BERGEON'S METHOD.

DR. S. SOLIS-COHEN related before the Philadelphia County Medical Society, May 11, 1887 (*Weekly Medical Review*, May 28, 1887), that he had succeeded in giving immediate relief in a case of asthma through the injection into the intestines of a mixture of carbonic acid and hydrogen sulphide as recommended by Bergeon.

SYRUP OF SACCHARIN.

POLLATSCHKE gives a formula in *Rundschau* (Prag) for making syrup of saccharin. The syrup is used in sweetening medicines for patients suffering from diabetes. Dissolve 10 parts of saccharin and 11 parts of carbonate or 12 parts of bicarbonate of sodium in 1000 parts distilled water at a temperature of 40° C.—*National Druggist*, June 17, 1887.

— THE — Therapeutic Gazette.

Whole Series,
Vol. XI.

Detroit, August 15, 1887.

Third Series,
Vol. III. No. 8.

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Original Communications.

REST IN THE TREATMENT OF DISEASE.*

By H. C. Wood, M.D., LL.D.†

THE object of the present lecture is to give you such ideas of the endeavors of the physician in the application of rest to the treatment of disease that you may intelligently co-operate with the doctor in charge

* A lecture delivered before the Training-School for Nurses of the Hospital of the University of Pennsylvania.

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of the case. You will remember, I trust, from your early childhood's teaching, that when Adam fell it was announced that by the sweat of man's brow he should earn his daily bread. In these later days we have changed all that, and a great many of the higher portion of man earn their daily bread not by the sweat of the brow but by the toil of the brain. In early childhood, when the little atom of humanity should be out in God's sunlight, he or she is put in school in cramped quarters, leaning over desks and learning lessons, struggling with toil and weariness to develop the brain and nervous system at the expense of the physical powers, if thereby in the future he may climb over some other little atom, who, like himself, has been sacrificed to the

Moloch of culture. As we grow in age this toil ever increases, until at last, when early manhood, or, perhaps, early womanhood, is reached, life is one perpetual nerve-strain. Many years ago, when old Professor Jackson, himself an example of this ruin which is wrought by overstrain, used to lecture to us at the University of Pennsylvania, he taught us this invaluable lesson, that every human being has a certain amount of nerve-force, which is produced by his system daily, and that if more nerve-force than the daily product be used, there will be a continual drawing on the reserve power, until there comes a time when nervous bankruptcy results. It is precisely the same as when a man with a fixed income lives on through the years, spending each year only a little, it may be, more than his income, but, as this continues, at last the capital begins to feel the drain, and, with an accelerated pace, ruin comes on.

Few of us, I think, clearly understand how much of nerve-force it requires simply to live. Remember that the heart beats seventy to eighty times a minute. These great strokes of the central pump must go on through night and day in order that the blood may freely flow through the system. The great tides of air must be drawn in and forced out of the lungs continually, at the expenditure of an enormous amount of nerve-force. When digestion is to be performed, it must be at the expenditure of nerve-force. Most of you have learned from experience this fact, that when you are over-tired a meal will not be digested, which, at other times, you would be able to appropriate without trouble. Many years ago, when a boy, I walked across Chester County from Maryland to the Chester Valley. I had nothing to eat all day, and at night, when we came to a farmer's, he loaded his board down with heavy short-cake. Now, short-cake is a substance that yields only to the digestion of untired boys and ostriches. All through that night and for several weeks afterwards I wished that I had never been born. I had so exhausted myself that there was left no nerve-power to digest this unreasonable food, and, as a result, it underwent fermentation, and poisoning occurred. The heart must act and air must be breathed, but digestion is not absolutely essential, and, consequently, when a man or woman becomes over-exhausted, digestion suffers and no food is taken. When power is failing and strain is greatest, too little fuel is supplied to meet the demand, and so, little by little, this

vicious circle is passed around, until it ends in failure and bankruptcy, which is more and more complete.

Again, often after an acute disease there is left a condition of exhaustion in which the vital powers are not able to supply the needs of every-day life and at the same time accumulate strength. Here, again, rest is necessary.

In health to meet company and associate with our friends adds new life and vigor and power, but the entertainment of people by a woman who is feeble and worn out requires a physical expenditure which is often a great strain. Hence comes the exhaustion of an excessively active social life. Hence it has come that as a central idea of the rest-cure isolation is an important feature. Here there is of course great danger that there shall be rest-cure quacks just as there are quacks with almost every form of special therapeutics. This is a remedial measure which is to be employed with care. It is not a stereotyped and set mould into which every little fragment of exhausted humanity is to be crowded and made to fit whether or not. In some instances it is to be applied with great severity, while in other cases it is only the principles which underlie it that are to be used.

The principle which underlies the rest-cure is, in the first place, the absolute avoidance of all physical expenditure of strength, so that there shall be time for digestion, and so that there shall be opportunity to accumulate the wasted income. One of you lives behind her financial income, and you then go to some hamlet and live in a corner until the income thus saved adds to the capital, and the fortune is restored. This is precisely what the doctor attempts to do when he applies the rest-cure. He puts the patients to bed, keeps them quiet, and does everything to avoid the expenditure of a single unnecessary grain of vital force. He takes that little grain of nerve-energy and uses it to digest a little particle of food, and thereby adds to the exhausted power. It is a very common thing in hungerless patients, put to bed under proper surroundings and kept quiet, to see the appetite return at once. Under these circumstances the appetite is the measure of the deficiency or of the surplus of nerve-power. If there be too little power for nerve-digestion there will be no appetite. When there is a husbanding of the resources the appetite returns.

If a patient is put to bed and allowed to lie there perfectly quiet, then his muscular system is in much the same condition as is that of

the fakir's arm. He ties up his arm, and keeps it so through the decades, and as a result there is a withered, structureless mass without power, the muscular fibre absolutely gone out of it. It is in the muscles of the human being and of the animal that the animal heat is chiefly produced. It is chiefly in the muscular system that are burnt up the effete substances that are the waste of the body, so when the muscles waste the animal heat fails, and the power to destroy effete matters fails. If, then, a patient is put to bed and kept perfectly quiet, there is lack of oxygenation of the tissues, and a gradual loss rather than a gain of power. The importance of rest in the treatment of disease has been long recognized, but it is to the sagacity of Dr. S. Weir Mitchell that we are indebted for the comprehension of the fact that we must not only try to conserve nerve-power, but to also supply power by maintaining the activity of the muscles in such a way that there shall be no draught upon the nerve-centres. If I move my arm there is an impulse flows out from the brain, and, by virtue of this expenditure, the arm is moved. If, however, I apply electrical stimulation, the muscle contracts, the structure of the muscle is maintained, and the activity of the muscle in destroying waste matters is kept up, but there is no expenditure of nerve-power.

Again, where there is no contraction of the muscles, there is a tendency to the accumulation of the juices from the blood in what we may call the by-roads of the system. It is not chiefly the blood that is in the vessels that directly nourishes the body, but the juices that have escaped from the blood that nourish the tissues. Along with every blood-vessel there runs a channel through which these juices that are not used are taken up, carried back into the trunk, and returned to the blood. When the muscles are inactive these little channels become choked up. When I forcibly contract my arm all these little channels are squeezed by the muscles, much as you squeeze a sponge when you take it in your hand. The squeezing of the muscles drives the blood on towards the centre of the body, and also causes the return of these juices to the trunk, and finally to the blood. With absolute rest and quiet there is very little return, and the parts become choked with the half-used blood or flesh-juices. Electrical stimulation causes contraction of the muscles and aids very much in the return of these juices, but it is chiefly single muscles that we pick out by the electrical current. Therefore,

partly for the purpose of aiding in the nutrition of the muscles, and partly for the purpose of returning these juices to the body, we add massage to the electricity. I have gone a little into the details of the principles involved because it not infrequently happens that persons in applying massage make mistakes because they do not appreciate the principles. Sometimes you will see a person rubbing the limb in a downward direction. This is contrary to the direction in which you wish these flesh-juices to go. You do not want to drive them from the arm into the fingers. You want to force them from the extremities to the centre. You continually try to work these juices from the outermost parts and return them to the central portions, where they will soon find their way into the blood.

Under certain circumstances the nurse is called upon to apply electricity. This is always an unfortunate thing, and the treatment sometimes fails on this account, for in using electricity for the purpose of which I am speaking constant judgment is required to know what succession of muscles to cause to contract and also how much of power to employ. It is always much better, where it is possible to do so, to employ some of the younger members of the profession whose time is not as valuable as that of the middle-aged man. I shall not occupy your time with an elaborate discussion of the methods of applying electricity, but shall only call your attention to those parts of the electrical treatment which it is the duty of the nurse to understand. In the first place, it is the duty of the nurse to know how to take care of the battery. There are various forms of faradic batteries, which are the ones employed in this method of treatment, but they all have certain features in common. There is always a cell which contains some acid liquid, into which is plunged a plate of zinc. When the battery is in action the zinc is gradually eaten up by the acid, and the acid is gradually exhausted by the destruction of the zinc, so that the battery destroys itself. The nurse should see that when the battery is not in actual use the zinc is removed from the acid. In the form of battery which I have here the zinc is removed by simply pulling up this rod. In other forms of batteries you have to loosen a screw which holds the zinc, and lift it out and put it into another cup. It is also the duty of the nurse to see that the battery is so kept that there is no spilling of the acid. The nurse should always see that the physician is provided with warm water, in which he can

wet the sponges, and it is well to use a little salt in the water. The water when first brought into the room should be hot, otherwise it may become cold before the séance is over.

With regard to massage, I believe that every thoroughly-instructed nurse should understand it. It, however, cannot be taught by lectures, but must be acquired by personal instruction. I myself know the theory of massage pretty thoroughly, but the practice of it is an entirely different thing. This requires training and the repetition of certain muscular movements until they are done firmly, smoothly, and gracefully. In massage the movements should commence with the fingers. It is well to begin with a rotatory movement in the joints. Then you begin the massage proper. There are three different movements employed,—first, stroking; second, kneading; third, a beating movement, which is made with the fingers acting like so many sticks. The stroking movement is especially directed to driving the juices out of the part operated upon towards the centre of the body. It should be made with the two hands simultaneously. The pressure must be made with the ball of the thumb and the palm of the hand. Before making this movement, if the skin is very susceptible, it should be greased with sweet cocoanut oil, vaseline, or some other unguent. Remember always that this is not rubbing. If you rub a patient, you want to irritate the skin. When you are practising massage you do not want irritation of the skin, but you especially desire to affect the deeper structures. The stroking movement is sometimes made simply with the upward movement of the two hands. It is better to grasp the limb with the one hand above the other. Then you commence the movement with the left hand, and follow it with the right, then slip back with the left hand, while the right keeps up the pressure.

In the kneading movement the effort is made to pick up the individual muscle, and so grasp it between the thumb and forefinger that you roll the muscle on itself. The movement in striking or beating is made with the fingers perfectly loose, and should be made from the wrist and elbow, never from the shoulder. It should be made as rapidly as possible, and carried up the entire limb.

The question of feeding a patient who is undergoing this method of treatment must be decided absolutely by the doctor. It is the nurse's simple business to carry out the directions given by the doctor. The doctor, under

these circumstances,—and I think he should do so in the treatment of all diseases,—should make out a written schedule, so that there can be no possible doubt as to the orders. Some years ago I had an important patient suffering with typhoid fever, who, I believe, was killed by a mistake of the nurse. It certainly was a very distinct solace to me that the orders of the nurse were plainly written. It was absolute carelessness on her part. In all cases of disease the orders for the nurse should be written. A schedule should be made out. We may start at eight A.M. with breakfast. At nine o'clock the bath may be given. In giving the bath it is essential that the patient should be absolutely nude, and she should be put between blankets. The water used should be as hot as can be borne. Unless otherwise directed, it is better to add a little hartshorn or ammonia to the water rather than to use soap. From one-half to one ounce of ordinary aquæ ammoniæ may be added to the small bucketful of water. This will leave the skin soft and in better condition than if soap has been freely used. The bath should occupy about thirty minutes. In most cases the patient is much better if rubbed with ice immediately after the bath or during the bath. This is not to be done unless ordered by the physician. If ordered to rub the patient with ice, you do not take a great iceberg, thrust it on the skin of the patient, and then go to sleep. You take a piece of ice and, with an up-and-down motion, rub it over the limb until the whole surface has been covered. Then dry with a coarse towel. You will find that under this treatment the pale, muddy skin rapidly becomes pink. We have no power equal to this use of hot water and ice in drawing the blood to the surface of the body and in stimulating the skin.

At ten o'clock the patient may have massage. At eleven o'clock milk or some food will probably be ordered. At one P.M. dinner will be taken. Medicines, if employed, are to be put in their proper places. At four o'clock electricity may be employed and a glass of milk given. At five o'clock supper will be given. Seven or eight o'clock will be bedtime. Usually the patient is in bed all the time, but I think patients progress more rapidly if they are permitted to be up a portion of the time.

In making the toilet of these patients never allow them to do up their hair. The great mass of hair which many women have is in itself a labor to comb, and the holding up of the arms is especially tiresome, yet fre-

quently this is one of the points on which patients are most stubborn. In a case of strict rest-cure, you must cut up the food of the patient, and see that the patient does not feed himself or herself. These are the cases in which the method is being used in its utmost strictness. If you have not had definite instructions with reference to these points, ask the physician what he wants you to do.

The hours of the day are twenty-four, but when a person is confined to bed they seem to become forty-eight. In this method of treatment there is so much to be done in the way of bathing, massage, and electricity that much of the time is past without the patient knowing it. There are, however, hours for which it is better to provide some amusement for the patient. I think, therefore, that every nurse, or every nurse who hopes to reach the highest point in her profession, should study the art of reading. The matter read is to be selected by the physician. It is very easy for the patient to tyrannize over the nurse who reads to her. A nurse recently told me that she had to read seven hours to the patient. This is tyranny, and it is the business of the physician to protect the nurse as much as it is his business to protect the patient. There is, perhaps, nothing which develops selfishness more rapidly and thoroughly in human nature than does a long period of chronic invalidism.

What I have been saying to you applies especially to the treatment of chronic disease, but it seems to me to be a matter of importance that you should have a clear idea of the application of the same principles to acute diseases. It also seems to me important, in order that you may be *en rapport* with the medical profession, that you should have some understanding of modern therapeutics and ways of treatment. Therefore I shall at this point branch out a little from the discussion of my main subject, coming back to show you how rest comes into the treatment of all diseases. There was a time when medicine was a purely empirical, dogmatic art. There is of necessity still much of dogmatism and empiricism in the practice of medicine,—that is, we are forced to do certain things because experience has taught us that certain things do good,—but every day are we, as scientific physicians, getting the power of treating disease intelligently and rationally. Perhaps the greatest nuisances that the doctor ever encounters are those amateur doctors, usually, I am compelled to say, of your esteemable sex, who think that they know medicine; the amount of their conceit is in direct propor-

tion to the depth of their ignorance. Under these circumstances you will find that the great stronghold out of which no argument will drive these amateur triflers with life is, "I have seen, and therefore I ought to know." Once I was in the smoking-room of a transatlantic steamer, and there was one of these pestilential creatures there, who this time wore a hat. He was continually bothering me with questions as to the why this and that man had been cured by this or that irregular practitioner after regular physicians had failed. Finally, after I had for some time dodged his questions to the best of my ability, a little Frenchman spoke up, and said to the questioner, "Your talk reminds me of a story." He then told the following story, which I regret that I cannot give in his broken English: "Once in a village there was a shoemaker who was very sick of a fever. Some one who was visiting the wife said to her, 'Your husband has been sick for a long time. I can cure him. Give him as much pork and cabbage as he can eat, and he will get well of the fever.' The next day the woman fed her husband on pork and cabbage, and lo and behold, the fever left the man and he recovered. He put down in his note-book, for future reference, 'Pork and cabbage cures fever.' A few days later there was no ring of the anvil in the village smithy. The shoemaker went to inquire what had become of the blacksmith. He was told that he was sick with a fever. At once he said, 'I know what will cure him. Give him pork and cabbage.' The wife administered pork and cabbage, and the blacksmith incontinently died. The shoemaker, on seeing the symbols of death on his neighbor's house, gets down his note-book to see if there has been any mistake. No, there it is, black and white, 'Pork and cabbage cures fever.' Finally, after rubbing his head awhile, he exclaimed, 'I have got it!' and he wrote in his note-book, 'Pork and cabbage cures shoemakers with fever, but it kills blacksmiths.'"

This pork-and-cabbage style of therapeutics was the only method of treatment of disease forty or fifty years ago; but, thanks to the homœopathic physicians, who emboldened the profession to watch the course of disease without treatment, the regular profession learned this important fact, that most acute diseases have in themselves a tendency to recover. It is the physician's duty to study the dangers which attend the disease and the methods which nature takes to bring about recovery. He should also study the drugs which he has

at his command, and by inductive reasoning apply his knowledge of drugs to his knowledge of the dangers of the disease. To make this clear, let me take you out on the broad Atlantic, where the sunlight is thrown back from every wave as the steamer ploughs the furrows that unite two continents. The captain notes that the mercury is falling. The mate sees a little cloud gathering in the west. To-morrow the hurricane will be upon the vessel. The captain cannot put back the hurricane, but he can make everything snug and tight about the vessel, and he can so turn the helm that the ship goes before the wind. He knows the dangers and avoids them. He goes with the tempest, and does not try to oppose it. This is generally the position of the physician in a case of acute disease. We cannot cure typhoid fever, but we can, if we study typhoid fever properly, carry the ship right on through the tempest and bring it into quiet waters.

The first thing that we learn in studying typhoid fever is, that in the majority of instances it causes death by producing exhaustion. We learn also that sometimes it kills by producing disease of the bowel with ulceration, and that a little particle of solid food getting upon one of these ulcers may tear open the bowel with fatal results. We study the dangers, and see how they are to be avoided. Of all the dangers in typhoid fever exhaustion is the most serious. The successful treatment of typhoid fever rests not upon the administration of drugs, although this may be important, not upon the meeting of this and that symptom as it arises, although the skilful physician does that, but it rests especially upon the fact that the disease has been recognized early, and that every grain of strength has been husbanded, so that in the coming weeks, when it shall be needed, it shall be present. I have often compared a patient with typhoid fever to a ship on a coast in a storm. The ship is being driven on to the point of rocks, but beyond the jutting promontory is smooth water and safety. If the captain can carry the ship around that jutting rock, it makes no difference how close he may come to it, if he but clears it, he is safe. So, in typhoid fever, there often comes a time when it is the last grain of strength that holds the man as he crosses by the edge of the open grave. If you can hold him for a few hours, until a little strength is gained, he is safe. The grain of strength which you as a nurse wasted by allowing the patient to get out of bed three weeks before, may be the

grain of strength which might have carried the man through. In every case of such disease it behooves you to remember that every particle of strength that you can save is perhaps life to that patient. The moment that there comes the slightest indication of the approaching storm the patient should be put to bed, kept quiet, and not allowed to make any motion or exertion. Many a doctor orders absolute rest, and the nurse perhaps thinks that she is carrying out her instructions, and the patient dies because the doctor is careless and the nurse is ignorant. Under these circumstances absolute rest means absolute rest. It means that the patient shall be put in bed, and not allowed to get out for anything. The patient may feel fairly strong, and will insist that he can get out of bed for the natural acts of the body. The patient is to be kept in bed, and under no circumstances, as you value your professional honor, do you let him rise. If the house is on fire, throw him over your shoulder and carry him out, but do not allow him to rise by himself.

Never allow these patients to make their own toilet. If a bath is ordered by the physician which apparently involves a waste of strength, see to it that it is your strength and not the patient's that is wasted. Do not let the patient do anything whatsoever. Do not let him make any exertion. The writing of a letter may mean death. A man may write a letter to his wife which is his own death-warrant.

This application of rest in the treatment of disease goes further. In all diseases the powers of the nurse should be directed to the saving of the strength of the patient, and you should remember that there is a mental worry which is more exhausting than physical exertion. Mere uncleanness, a low voice to a deaf patient, a loud, high-pitched voice to a patient whose hearing is acute, failure to quickly understand the whims and caprices of a sick man or woman, are tormenting things which take away the rest and destroy the life of the patient. We talk about uncleanly nurses, and we all know the type of nurse which was pinned up by Dickens for all ages, as the entomologist pins up the beetle and watches its unclean movements, but the unclean nurse is scarcely as bad as the fussy nurse. In one of the hospitals during the war there was a young soldier who happened to be good-looking and near the door. The majority of amateur nurses that came into the room wanted to do something for him. A young lady came into the room one day and

said, "Can I not do something for you?" "Perhaps," he replied. "Can't I wash your face?" "Yes, if it will give you any pleasure, but you are the thirty-seventh that has done it to-day." A nurse who is continually shifting the blinds, moving about the room when there is no need for it, asking the patient whether he wants this or that, or is excessively active and alert, is a great evil.

Now, nurses of the University Hospital, let me say one more word to you. I think that your calling is one of the highest to which a human being ever devoted herself. You remember that the Bible tells us that "He giveth His beloved sleep;" but sleep is rest. So will you, I trust, comport yourselves that in the future, as you go from house to house, it shall be said of you, "She gave me rest."

THE THERMOGENETIC APPARATUS—ITS RELATION TO ATROPINE.

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THE phenomena of fever have been divided by Dr. Donald McAllister into thermogenetic, thermotaxic, and thermolytic. We believe the thermogenetic apparatus to be mainly seated in the spinal cord, although it is highly probable that similar centres exist in the brain.

The thermotaxic apparatus located by one of us has its cerebral origin (1) in the tissues about the corpus striatum, (2) Schiff's crying centre, and (3) the anterior end of the thalamus. Its fibres probably decussate about the nib of the calamus, and then run down the lateral columns.*

The existence of the centre about the corpus striatum has been confirmed by the researches of Sachs and Aronsohn,† Girard,‡ and Baginsky.§ They found that electric irritation of the corpus striatum increased the temperature.

Baginsky and Lehmann destroyed the nuclei caudati and found an increase of temperature. It is difficult to state why electric irritation increases temperature if the centre is inhibitory. Usually irritation of an inhibitory centre causes a diminished action of the dependent function.

It is possible, however, that the irritation

of the corpus striatum also irritates sensory nerve-fibres, causing an increase of temperature, the usual result, and thus counterbalances the depression of temperature consequent to the irritation of the caudate nuclei.

Our observations on the spinal cord show that it requires but slight injury on the inner side of the lateral columns to allow increased thermogenetic action, as also does a slight puncture at a distance from the cerebral heat centres.

Sachs and Aronsohn found an increase of both the consumption of oxygen and the excretion of carbonic acid after puncturing the tissues about the corpus striatum.

They also found an increased waste of the albumens of the body, and a twenty-five per cent. increase of nitrogen in the urine.

The animals were previously fed on a non-nitrogenous diet.

Girard also confirmed their observations on the urinary nitrogen.

Richet's statements never became more definite than that the anterior part of the brain cortex, when irritated, caused increased temperature, which was calorimetrically determined to be due to increased heat production.

One of us investigated the brain cortex of rabbits with negative results, conclusions which have been confirmed by Sachs and Aronsohn.

The thermolytic apparatus, or heat-dissipating apparatus, consists of the vaso-motor system, sweat-glands, the lungs, and the reflex action of surface sensory nerves on the thermotaxic or inhibitory apparatus, allowing increased or diminished heat production, according to the requirements of surrounding temperature.

In this paper we wish to advance additional evidence of the existence of spinal heat centres.

Atropine has always been of great value to the physiologist in the elucidation of obscure phenomena.

We have used it in a series of experiments to demonstrate its relation to the thermogenetic apparatus, and found that it causes the temperature of animals to rise, the elevation varying from $1\frac{1}{2}^{\circ}$ F. to 6.8° F.

If a cat be bound down in a warm room, the rise of temperature without atropine will be 2.1° F. in one and three-quarter hours. The animal's efforts to release itself keep up an irritation which corresponds with the condition of affairs when experimenting with the drug.

* *Journal of Nervous Diseases*, 1887.

† *Pflüger's Archiv*.

‡ *Archives de Physiologie Normale et Pathologique*, October, 1886.

§ *Virchow's Archiv*, November, 1886.

We give *in extenso* an experiment on the normal animal.

Cat bound down.

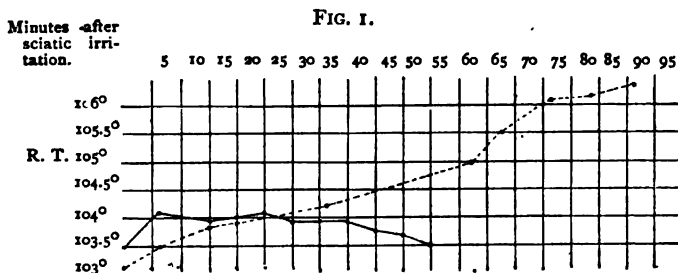
Time. P.M.	Rectal temp.	Air temp.
1.55	101.8°	96°
2.25	102.8°	
2.45	103.1°	
2.55	103.6°	
3.45	103.9°	

If during the rising temperature caused by atropine the central end of the sciatic be irritated, a greater rise ensues, which is followed or not by a fall, but not below the level of temperature existing before the irritation.

Subsequent irritation of the sciatic in Experiment 3 caused no further rise of temperature.

Fig. 1 shows the effect of sciatic irritation on the normal rabbit and atropinized cat, the continuous line marking the rise and subsequent fall which take place in the non-atropinized rabbit, while the dotted line shows the effect of sciatic irritation on the temperature of an atropinized cat.

In the latter the ascent is not sudden as in the normal line, but is gradual, and continues so without falling. If after administering the atropine the cat be allowed to go about the laboratory there will be a rise of temperature, but not nearly as great as when bound down.



In other words, while sciatic irritation in the normal animal, after a preliminary rise, causes a fall of temperature below the normal, atropine prevents a fall below the point attained before the irritation.

It seems that in atropinized cats sciatic irritation is able to cause a great elevation of temperature in a very short time, as in Experiment 3, where the temperature, after a grain and a half of atropine per jugular, sank to 97° F.; from this point on applying sciatic irritation, it rose rapidly to 102° F., a gain of 5° F. in sixteen minutes. (A fair example to show that the gain must be due to increased heat production, as mere diminished dissipation, such as might be caused by vaso-motor contraction, could not occasion such a rise in so short a time.)

The large dose of atropine caused a fall of blood-pressure, and sensory irritation of the sciatic had little effect in increasing the pressure; large doses prevent the sensory irritation from stirring up the vaso-motor apparatus.

Further, in the normal animal, where sciatic irritation causes increased arterial tension, a rise of a degree is about the extent of the effect on the bodily temperature, showing that under atropine the rise must be due to something more than diminished heat dissipation from increased arterial tension.

From this we conclude that the thongs which bind it down act as an irritant similar to the electric irritation of the sciatic. After a dose of atropine the maximum temperature is reached usually at the end of about two hours. Furthermore, the experiments of Von Bezold and Bloebaum show that small doses of atropine elevate the arterial tension and then depress it. Thus we have as a concomitant of a continuously rising temperature, at first a rise of blood-pressure followed by a fall below the normal.

Thus, in Fig. 2, the upper line shows the increasing temperature and the lower line the falling arterial tension.

Ordinarily the increased arterial tension would cause diminished heat dissipation, but our calorimeter experiments demonstrate that during the action of atropine the heat dissipation is increased as well as the heat production.

Hence we infer that circulatory changes have little to do with the rise of temperature under atropine. Atropine also greatly accelerates respiratory movements, but in doing so it makes them more superficial, while in the normal animal bound down the respiration is also much accelerated.

We believe that the rapid respiration also has little effect on the temperature.

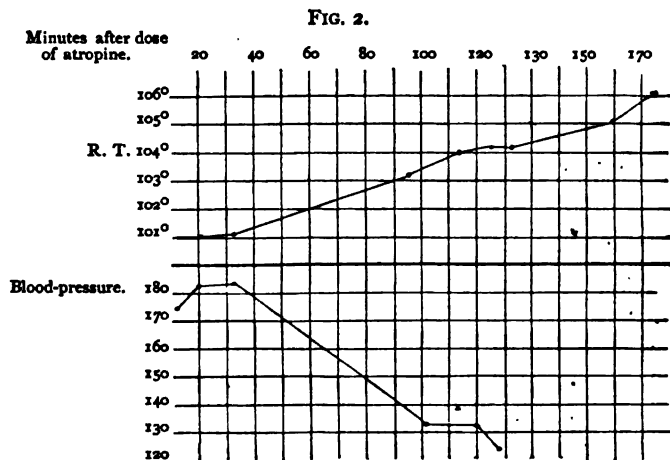
If the rise of temperature is due neither to

circulatory nor respiratory changes, the cause must be seated either in the muscular or nervous system.

As atropine in small doses does not cause convulsions in warm-blooded animals, the source of increased temperature is not in the muscles, with atropine sphincter rhythm appears. Here it must either paralyze the thalamic inhibitory centres, or excite the spinal centres sufficiently to overcome the inhibition, or act on both at the same time so as to weaken the former and excite the latter.

ulant of the spinal cord, evidence in this direction is superfluous.

We believe the increase of temperature to be due to an excitation of the spinal heat centres, and that the irritation of the central end of the sciatic is not able to overcome the spinal stimulation, but rather excites them still more, because the inhibitory centres usually called into activity by sciatic irritation are less active under the drug. This view of the stimulation of the spinal heat centres by atropine is still further strengthened by calorimetric investigations.



That it is dependent on the nervous system is proved by the experiment where the animal was curarized, atropine given, the sciatic irritated, and the surrounding temperature high, yet a rise of temperature ensued. It has also been shown by one of us that at the base of the thalami and the head of the crura cerebri are centres which inhibit the sphincters. When these centres are destroyed a rhythm of the sphincters ensues. Now, if a cat receives a large dose of atropine, irritation of the vagina calls out a rhythm of the sphincter, although the sciatic at the time is strongly stimulated. Usually strong sciatic irritation causes an arrest of the rhythm. Now, this experiment proves that atropine either so excites the excito-motor apparatus of the spinal cord as to overcome the thalamic centres, or it weakens the inhibitory centres of the thalami and in this way starts the rhythm. The sudden starts of the animal upon a noise being made would lend support to the view that the inhibitory centres are weakened. The well-known action of atropine upon the inhibitory apparatus of the heart and intestine also makes us believe the inhibitory centres are weakened at the time the spinal reflex centres are excited. As it is well known that atropine is a great stim-

Both cats and rabbits were placed in D'Arsonval's calorimeter, which is surrounded by felt, feathers, and saw-dust. The temperature of the surrounding air was kept as near as possible within a degree of that of the calorimeter. The sensibility to external heat of our apparatus is $.025^{\circ}$ F. for each degree the calorimeter is below that of the surrounding air, thus giving accurate results.

Experiment 1.—Cat.

Time. P.M.	Cal. temp.	Rec. temp.
1.51	81.2°	100.8°
2.51	82.2°	100.5°
3.07	injection of $\frac{1}{80}$ grain of atropine by the jugular.	
3.19	82.3°	101.5°
4.19	83.3°	102.0°

Heat dissipation before drug.....	41.72
Heat dissipation after drug.....	41.72
Heat production before drug.....	40.68
Heat production after drug.....	43.64

Experiment 2.—Rabbit.

Time. P.M.	Cal. temp.	Rec. temp.
2.12	86.875°	104.0°
3.12	87.675°	103.5°
3.20	Injection of $\frac{1}{40}$ grain of atropine by the jugular.	
3.42	87.925°	103.9°
4.42	88.7°	105.0°

Heat dissipation before drug.....	34.21
Heat dissipation after drug.....	32.33
Heat production before drug.....	32.82
Heat production after drug.....	35.40

Experiment 3.—Rabbit.

Time. A.M.	A. T.	C. T.	E. T.	R. T.
9.33	80.3°	80.1°	27.6°	103.3°
10.33	81.3°	80.475°	27.8°	102.7°
10.50	$\frac{1}{40}$ of a grain of atropine by the jugular.			
11.10	83.1°	80.55°	28.8°	102.7°
12.10	84.0°	81.0°	28.7°	104.6°

Heat dissipation before drug.....	15.64
Heat dissipation after drug.....	18.77
Heat production before drug.....	17.33
Heat production after drug.....	21.75

Experiment 4.—Cat.

Time. P.M.	Cal. temp.	Rec. temp.
2.09	80.49°	101.0°
3.09	81.25°	101.2°
3.12	Injection of $\frac{1}{80}$ grain of atropine by the jugular.	
3.31	81.35°	101.9°
4.31	82.25°	102.3°

Heat dissipation before drug.....	31.70
Heat dissipation after drug.....	37.54
Heat production before drug.....	31.04
Heat production after drug.....	38.86

	Increase of heat production.	Increase and decrease of heat dissipation.
1.....	+ 2.58°	0.°
2.....	+ 2.96°	— 1.88°
3.....	+ 4.42°	+ 3.13°
4.....	+ 7.82°	+ 5.84°

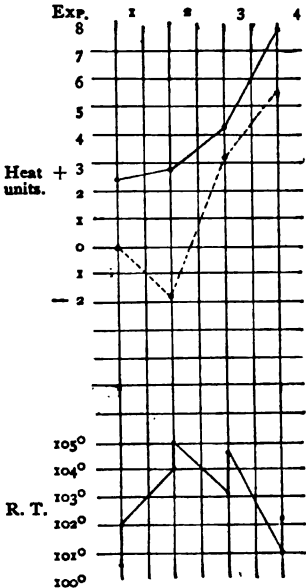
It will be seen by the above table and the curves in Fig. 3, the dotted line showing heat dissipation and the continuous line heat production, that both heat production and heat dissipation are increased, the production more than the dissipation. Hence we believe that atropine increases the temperature by stimulating the thermogenetic centres seated in the spinal cord.

Pathological facts also support this view of the existence of a spinal and cerebral heat apparatus independent of circulatory influence.

Thus, of tetanus, Dr. C. B. Radcliffe* writes, "It is more than difficult to connect the increased heat of tetanus with increased activity of the circulation, or with anything else like fever in the ordinary sense of the word. The temperature rises as the time of death approaches, when the state of the circulation must every moment be becoming more and more the reverse of increased ac-

tivity. The temperature continues to rise even after actual death, when the blood has come to a stand-still. These are the facts, and these being the facts it may be that the increased heat of tetanus may be connected not with increased activity of the circulation, not with true fever, but rather with the contrary state of things.

FIG. 3.



"Nor is it more easy to connect the increased heat of tetanus with the spasms. A part of the increase may be accounted for in this manner, but only a small part. Indeed, the simple fact that in one of the cases which has been instanced a marked abatement in the severity of the spasms was accompanied by an actual rise in the column of mercury, and that the column continued to rise after death, when all spasm is at an end, is in itself a sufficient proof that it is not in muscular action that the explanation of the increased temperature of tetanus is found.

"Moreover, the fact that the temperature rises in the same way before and after death in cases where neither convulsions nor spasms were among the symptoms during life, must lead to the same conclusion."

Dr. Radcliffe's deductions on the temperature of tetanus and the post-mortem rise are entirely compatible with their explanation derived from later knowledge of the heat apparatus,—that is, the cerebral inhibitory centres are paralyzed, and thus permit the spinal thermogenetic centres to assume unchecked activity. In other words, the spinal heat centres behave just as they do after section of the

* Reynolds's "System of Medicine."

lateral columns of the spinal cord, and allow a great increase of activity in them, which causes the increased temperature.

In the light of our researches there is at present no other rational explanation of these facts. Hence our conclusion that atropine causes an increase of temperature by stimulating the thermogenetic centres in the spinal cord, which produces increased chemical activity in the tissues.

Experiment 1.—Etherized cat; bound down.

Time. A.M.	Rec. temp.	Air temp.	Blood-pressure, millimetres.
11.00	101.4°	90°	
11.05	Injection $\frac{1}{8}$ grain of atropine.		
11.15	101.4°	90°	
11.20	101.6°		
11.45	102.4°	90°	
12.05	103.2°	90°	
12.10	Irritation of sciatic by DuBois coil.		
12.12	103.5°		
12.14	103.8°		
12.18	103.9°		
12.37	104.4°		
P.M.			
1.00	105.0°		
1.05	105.5°		
1.15	106.2°	90°	
1.22	106.3°		
1.30	106.4°	Sciatic irritation.	
1.40	106.6°		
1.50	106.6°	90°	165
2.15	106.3°		
2.42	104.2°		

Experiment 2.—Cat; bound down; etherized.

Time. P.M.	Rec. Temp.	Blood-pressure.
2.30	101.2°	
2.50	.....	165
3.20	Central end of sciatic irritated.	
3.25	101.0°	204
3.30	Injection by jugular of $\frac{1}{8}$ grain of atropine.	
3.30	101.8°	98
3.31	Irritation of central end of sciatic.	
3.32	.....	100
3.40	101.5°	
3.50	$\frac{1}{8}$ grain of atropine by jugular.	
4.00	101.2°	Injection of $\frac{1}{8}$ grain atropine.
4.01	Injection of $\frac{1}{8}$ grain of atropine.	
4.08	.....	64
4.09	Irritation of central end of sciatic.	
4.10	.....	64
5.04	98.0°	Sciatic irritated.
5.05	97.4°	
5.15	97.2°	
5.21	97.0°	

Experiment 3.—Cat; bound down; etherized.

Time. P.M.	Rec. Temp.
2.00	101.5°
2.10	$\frac{1}{8}$ grain of atropine by the jugular.

Time. P.M.	Rec. Temp.
3.10	99.9° $\frac{1}{8}$ grain of atropine.
4.30	1 grain of atropine.
4.40	99.9°
4.41	Irritation of sciatic begun.
4.42	100.2°
4.45	Irritation of sciatic arrested.
4.47	100.1°
4.53	Sciatic irritated five minutes.
4.58	100.2°
4.59	100.3°
5.03	Sciatic irritation for three minutes.
5.05	100.5°
5.09	100.6°
5.11	100.5°
5.14	100.4°
5.30	100.0°
5.42	99.1°

Experiment 4.—Rabbit; etherized.

Time. P.M.	Rec. temp.
1.45	102.8°
2.02	$\frac{1}{8}$ grain of atropine by the jugular.
2.32	101.0°
3.24	101.7°
4.00	102.1°
4.30	102.4°
5.00	102.0°
5.50	103.1°

Experiment 5.—Rabbit; etherized.

Time. P.M.	Rec. temp.
2.48	103.4° $\frac{1}{8}$ grain of atropine hypodermically.
3.24	102.8°
4.00	102.1°
4.30	102.6°
5.00	103.2°
6.00	104.0°

Experiment 6.—Cat; has been previously experimented on; slightly atropinized; not bound down; etherized.

Time. P.M.	Rec. temp.
1.35	103.3°
1.36	$\frac{1}{8}$ grain of atropine by the jugular.
2.16	103.4°
2.55	103.8°
3.35	104.5°

Experiment 7.—Rabbit; not bound down; etherized.

Time. P.M.	Rec. temp.	Air temp.
1.40	103.2°	85°
1.45	$\frac{1}{8}$ grain of atropine by the jugular.	
2.10	103.0°	
2.25	103.6°	85°
2.45	104.2°	
3.05	104.4°	
3.25	104.7°	
4.00	104.6°	
4.30	104.2°	80°

Experiment 8.—Cat ; etherized.

Time. P.M.	Rec. temp.	
2.25	101.0°	$\frac{1}{10}$ grain of atropine hypo-dermically.
3.12	103.8°	
3.42	104.7°	
4.20	103.7°	
5.05	101.8°	

Experiment 9.—Black cat ; has been slightly atropinized two days previously ; bound down ; etherized.

Time. P.M.	Rec. temp.	Air temp.
2.10	103.2°	$\frac{1}{10}$ grain of atropine by the jugular.
2.55	104.0°	
3.30	108.0°	93°
4.00	110.0°	Animal has been dead fifteen minutes.

Experiment 10.—Cat ; bound down ; etherized.

Time. P.M.	Rec. temp.	
3.45	103.9°	
3.50	$\frac{1}{10}$ grain of atropine by the jugular.	
4.30	104.4°	
5.00	104.5°	
5.05	Sciatic irritated three minutes.	
5.15	105.6°	
5.28	105.1°	
5.42	105.1°	
6.00	104.7°	

Experiment 11.—Rabbit ; etherized ; animal running about the laboratory during the observations.

Time. P.M.	Rec. temp.	Air temp.
1.40	103.2°	85°
1.45	$\frac{1}{10}$ grain of atropine sulph. per jugular.	
2.10	103.0°	
2.25	103.6°	85°
2.45	104.2°	
3.05	104.4°	
3.25	104.7°	
4.00	104.6°	
4.30	104.2°	80°

Experiment 12.—Cat ; not bound down ; etherized.

Time. P.M.	Rec. temp.	
1.35	103.3°	
1.36	$\frac{1}{10}$ grain of atropine sulph. by jugular.	
2.16	103.4°	
3.55	103.8°	
3.35	104.5°	
4.00	104.0°	

Experiment 13.—Cat ; bound down ; etherized.

Time. P.M.	Rec. temp.	Air temp.
2.30	100.0°	
2.49	$\frac{1}{10}$ grain of atropine by the jugular.	

Time. P.M.	Rec. temp.	Air temp.
2.56	98.2°	
3.05	97.6°	
3.25	96.0°	Sciatic's central end irritated with current from DuBois inductorium.
3.35	97.0°	
3.41	102.0°	80°
3.57	97.0°	Central end of sciatic irritated.
4.20	96.0°	

Experiment 14.—Rabbit ; bound down ; etherized.

Time. P.M.	Rec. temp.	Air temp.
1.45	101.4°	94
1.48	Injection per jugular of $\frac{1}{10}$ grain of atropine.	
2.55	102.6°	
2.57	Irritation of central end of sciatic for three minutes.	
3.12	105.0°	
3.15	Irritation of sciatic for three minutes.	
3.23	105.4°	
3.32	105.6°	

Experiment 15.—Rabbit ; bound down.

Time. P.M.	Rec. temp.	Air temp.
1.20	103.2°	100°
1.21	Irritation of sciatic at sixty millimetres for three minutes.	
1.25	103.6°	
1.30	103.5°	
1.35	103.5°	
1.40	103.5°	
2.23	103.6°	
2.24	103.5°	
2.25	Irritation of sciatic for one minute at 0 of coil.	
2.27	104.3°	
2.33	104.1°	
2.38	103.8°	
2.43	104.0°	
2.45	104.1°	
2.53	103.8°	
2.58	103.9°	
3.03	103.9°	
3.07	103.7°	
3.15	103.7°	
3.25	103.7°	
3.27	103.5°	

Experiment 16.—Cat ; etherized.

Time. A.M.	Pulse.	Pressure.	Rec. temp.
10.15	50	176	101.0°
10.16	Injection of $\frac{1}{10}$ grain of atropine by the jugular.		
10.26	74	184	101.0°
10.30	Injection of $\frac{1}{10}$ grain of atropine by the jugular.		
10.38	70	184	101.3°
11.48	70	132	103.1°
P.M.			
12.05	...	132	104.0°
12.13	...	124	104.3°
12.16	...	.....	105.0°
12.45	...	.....	106.0°

Experiment 17.—Rabbit; received curare subcutaneously; sciatic prepared; animal bound down.

Time. P.M.		Rec. temp.	Air temp.
2.40	.....	102.9°	96°
2.52	$\frac{1}{10}$ grain of atropine by jugular.		
2.58	.....	102.8°	
3.07	Irritation at 350 millimetres for ten seconds.....	102.4°	
3.08	.....	102.5°	
3.12	Irritation at 35 for ten seconds.		
3.18	.....	102.8°	94°
3.25	.....	102.7°	
3.26	Irritation at 35 for fifteen seconds.		
3.44	.....	101.8°	
3.52	.....	101.8°	
4.15	.....	101.4°	92°
4.25	Breathing normally.....	100.6°	

Experiment 18.—Cat; bound down.

Time. A.M.		Rec. temp.
11.30	$\frac{1}{2}$ grain of atropine by the jugular ...	102.6°
11.40	$\frac{1}{2}$ grain of atropine by the jugular. Irritation of sciatic prevents the sphincter rhythm evoked by vaginal irritation.	
11.50	1 grain of atropine.....	103.6°
12.03	With current from DuBois coil at 230 millimetres vaginal irritation occasionally calls out rhythm.	
12.15	Same result as at 12.03 P.M. $\frac{1}{2}$ grain of atropine by the jugular.	
12.22	With strongest sciatic irritation vaginal irritation occasionally calls out rhythm.	
1.05	.....	105.5°

COMPARATIVE EXPERIMENTS BETWEEN THE ACTION OF PAPOID AND PEPSIN.

BY DR. D. FINKLER.*

PAPOID is a ferment which is manufactured according to my specification from the plant called *Carica papaya*. It is an albuminous body, which, under certain conditions, can change albumen into peptone. The conditions which produce this change are very different to those under which pepsin and pancreatin produce the same effect.

In order to demonstrate the effect of papoid I shall indicate various experiments made by myself, which will give an exact insight into

the conditions of the effect and also a comparison of the effect of pepsin.

For these comparative trials I used a pepsin of known best quality, most of the commercial pepsin being decidedly weaker than that I used.

First question: Has papoid really a digesting property?

Experiment 1.—*a.* 5 grms. raw meat minced, 50 c.c. water, 5 c.c. of a one per cent. papoid solution (1 gr. in 100 c.c. water). This mixture was put into the oven, and kept for twenty-one hours at 38° C. It was then filtered. The filtered portion contains the albuminous substance of the meat turned into peptone, which is not precipitated by nitric acid, nor by potassium ferrocyanide and acetic acid. It is precipitated by tannic acid, and the xanthoproteic and biuret reactions are well shown. The non-peptonized residue of the meat weighs when dried 0.1 gram.

Therefore ninety per cent. of the solid portions of the meat had been dissolved in water. Of the albuminous substances of the meat eighty-seven per cent. were peptonized, which shows a very energetic degree of digestion.

b. For comparison, 5 grms. raw meat minced, 55 c.c. hydrochloric acid (0.2 per cent.), and 5 c.c. of a one per cent. solution pepsin were treated as above.

After twenty-one hours 70.6 per cent. of the albuminous substance of the meat was peptonized.

Experiment 2.—*a.* 5 grms. meat, 50 c.c. water, 0.5 c.c. of a one per cent. papoid solution.

After forty hours the non-peptonized residue of the meat weighed 0.19 gram.

Of the albumen of the meat 77.7 per cent. was dissolved in the water as true peptone.

b. 5 grms. meat, 50 c.c. hydrochlor. acid (0.2 per cent.), 0.5 c.c. of a one per cent. pepsin solution.

After forty hours the non-peptonized residue weighed 0.19 gram. Of the albumen of the meat 77.7 per cent. was peptonized.

Experiment 3.—*a.* 10 grms. meat, 20 c.c. water, 1.5 c.c. of a one per cent. papoid solution.

After thirty-six hours 73.5 per cent. of the albumen of the meat was changed into true peptone.

b. 10 grms. meat, 20 c.c. hydrochlor. acid (0.2 per cent.), 1.5 c.c. of a one per cent. pepsin solution.

After thirty-six hours eighteen per cent. of the albumen of the meat was changed into true peptone.

* Professor at University of Bonn, Germany.

RÉSUMÉ OF THE THREE EXPERIMENTS.

Ferment.	Digested albumen of the meat.	Time.	Proportion of the quantity of ferment to the meat.	Proportion of the quantity of meat to the liquid.
Papoid 1.	87 per cent.	21 hours.	1 to 100	1 to 10
Papoid 2.	77.7 per cent.	40 hours.	1 to 1000	1 to 10
Papoid 3.	73.5 per cent.	36 hours.	1 to 600	1 to 2
Pepsin 1.	70.6 per cent.	21 hours.	1 to 100	1 to 10
Pepsin 2.	77.7 per cent.	40 hours.	1 to 500	1 to 10
Pepsin 3.	18 per cent.	36 hours.	1 to 600	1 to 2

Papoid therefore shows a more energetic peptonizing power than pepsin, and specially so when the proportion of the liquid to the albumen is small,—i.e., in the proportion of concentration in which food generally exists in the stomach and in the intestines. The great variability in the quality of commercial pepsin (some of which will under the most favorable circumstances not peptonize more than twenty per cent. of the albumen of the meat) gives papoid also the preference, as it is made of one uniform quality.

The peptonizing of hard-boiled egg (albumen) is demonstrated by the following experiments. (The tests were made in an oven at 38° C.)

Experiment 4.—a. 5 grms. albumen (hard-boiled egg), 50 c.c. water, 5 c.c. of a one per cent. papoid solution.

After sixty hours in oven, at 38° C., small residue, peptonized ninety-five per cent.

b. 5 grms. albumen, 50 c.c. hydrochloric acid (0.2 per cent.), 5 c.c. of a one per cent. papoid solution.

After eighteen hours all peptonized,—one hundred per cent.

Experiment 5.—a. 5 grms. albumen, 50 c.c. water, 0.5 c.c. of a one per cent. papoid solution.

After sixty hours all peptonized,—one hundred per cent.

b. 5 grms. albumen, 50 c.c. hydrochlor. acid (0.2 per cent.), 0.5 c.c. of a one per cent. pepsin solution.

After eighteen hours all peptonized,—one hundred per cent.

Experiment 6.—a. 5 grms. albumen, 10 c.c. water, 0.5 c.c. of a one per cent. papoid solution.

After forty-five hours peptonized eighty per cent.

b. 5 grms. albumen, 10 c.c. hydrochlor. acid (0.2 per cent.), 0.5 c.c. of a one per cent. pepsin solution.

After forty-five hours peptonized forty per cent.

Experiment 7.—a. 10 grms. albumen (egg boiled five minutes, rubbed down), 20 c.c. of a one per cent. papoid solution.

After fourteen hours all albumen is dissolved.

Reactions.—1. Boiling only produces a slight precipitate.

2. Xanthoproteic reaction succeeds very well.

3. Biuret reaction also shows very nicely.

4. Acetic acid and potassium ferrocyanide give slight precipitate.

The albumen is therefore all peptonized, one hundred per cent.

b. 10 grms. albumen, 20 c.c. of a one per cent. solution pepsin in 0.2 per cent. hydrochloric acid.

Albumen dissolves slowly. After forty-five hours only fifty per cent. of albumen is peptonized.

RÉSUMÉ OF THE FOUR EXPERIMENTS.

Ferment.	Albumen peptonized.	Time.	Proportion of quantity of ferment to albumen.	Proportion of albumen to liquid.
Papoid 4.	95 per cent.	60 hours.	1 to 100	1 to 10
Papoid 5.	100 per cent.	60 hours.	1 to 1000	1 to 10
Papoid 6.	80 per cent.	45 hours.	1 to 1000	1 to 2
Papoid 7.	100 per cent.	14 hours.	1 to 50	1 to 2
Pepsin 4.	100 per cent.	18 hours.	1 to 100	1 to 10
Pepsin 5.	100 per cent.	18 hours.	1 to 1000	1 to 10
Pepsin 6.	40 per cent.	45 hours.	1 to 1000	1 to 2
Pepsin 7.	50 per cent.	45 hours.	1 to 50	1 to 2

Result.—Hard-boiled egg is better digested by pepsin, if the quantity of liquid is larger in proportion. As soon, however, as a more concentrated mixture is employed superiority of the papoid is at once evident.

Second question: What effect can be obtained by the ferment in the human body?

a. Concentration of the solution is of first importance. It is impossible to create in the stomach and intestines such amount of liquid as would be favorable to the effect of pepsin. The conditions, therefore, are very much in favor of papoid.

b. Importance of the Reaction.—Pepsin acts in the stomach, but not in the intestines as in the latter. The reaction is neutral or alkaline. Papoid has little effect in the stomach, as the reaction there is acid. When, however, the stomach is neutral or alkaline, papoid will peptonize, while pepsin will be useless. The de-

gree (amount) of acid reaction in the stomach differs greatly, especially in case of a stomach out of order; in which case the reaction can be so highly acid or alkaline that pepsin would be of no value at all. In the treatment of stomach-catarrhs we will, moreover, find that, as a general rule, the contents of the viscus have been rendered artificially neutral or alkaline by the administration of remedies, so that in these cases pepsin will have absolutely no effect. Papoid, on the contrary, will act energetically.

c. Regarding the Time available for the Digestive Ferment to act in the Body.—In the case of pepsin this is necessarily very short, as the action ceases when the food enters the alkaline reaction of the intestines. In the case of papoid, which can act well in alkaline reaction, the time is practically unlimited, as it continues acting on the food during the whole time it continues in the body. For all these reasons the conditions for the effect in the human body are far more in favor of papoid than pepsin, and especially as under existing circumstances (high degree of concentration) papoid has been shown to act much more energetically. It is only too clear that the preference should be given to papoid as a digestive ferment for the treatment of dyspepsia. Besides dyspepsia, the papoid is of great importance in the treatment of diphtheria.

Its effective power consists in the circumstances that no free acid need be present in the application, and further that the moisture of the diphtheritic membranes is quite sufficient to allow the ferment to dissolve the solidified substances of the membranes. No other ferment has so far been able to obtain these results. It is on this account that many competent experimentalists and specialists have lately made observations.

From all these circumstances there is no doubt that in papoid we have a ferment which has a great future before it, and it is for this reason that I have made a special study of the manner of preparing the papoid, and I have had the satisfaction of obtaining the most favorable results from its use in the treatment of disease.

THE INFLUENCE OF ANTIFEBRIN, SALICYLIC ACID, AND CARBOLIC ACID ON NORMAL AND ABNORMAL BODILY TEMPERATURE.

BY H. A. HARE, M.D. (UNIV. OF PA.).*

(Continued from page 451.)

III. CARBOLIC ACID.†

THE influence of carbolic acid on temperature in the normal animal has not, that I am aware of, been studied, although Emil Ertl† has found that in mild putrid poisoning it greatly diminishes fever heat, but if the poisoning be severe the acid has no influence.

On glancing at the following tables, which represent the results reached in a series of ten experiments on the normal rectal temperature of rabbits, it is evident that this drug acts much more positively than does salicylic acid, and we find that in every instance there was a fall in the normal bodily heat after the administration of the drug, though in one instance this fall ultimately ended in a rise, which passed above the original and primary temperature of the animal before the injection of the acid.

Experiment 1.—Rabbit; weight, 3 pounds. Gray doe.

Time. A.M.	Drug.	Rec. temp.	Remarks.
11.35	102 $\frac{3}{8}$ °	
11.37	3 drops.	.....	Struggled hard when caught.
11.57	103°	Drug injected hypodermically in 30 minims of glycerin and water.
12.17	102 $\frac{3}{8}$ °	
12.37	101 $\frac{1}{8}$ °	
12.57	101 $\frac{1}{8}$ °	
1.17	101 $\frac{1}{8}$ °	
1.37	101 $\frac{1}{8}$ °	
1.57	101 $\frac{3}{8}$ °	
2.17	101 $\frac{1}{8}$ °	
2.37	101°	
6.15	101 $\frac{1}{8}$ °	Fall of temperature = 1 $\frac{3}{8}$ ° F.

Experiment 2.—Rabbit; weight, 2 pounds. Black and white doe.

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† The carbolic acid used was made by Calvert and was chemically pure, and consisted of the drops obtained from deliquescence of the crystals.

‡ *Schmidt's Jahrbücher*, Bd. clxiv. p. 148.

Time. A.M.	Drug.	Rec. temp.	Remarks.
11.15	103 $\frac{3}{8}$ °	
11.17	2 drops.	.....	Quiet.
12.05	102°	Injected hypodermically in 30 minims of glycerin and water.
12.35	101 $\frac{4}{8}$ °	
1.05	102 $\frac{1}{8}$ °	
1.35	
2.05	102 $\frac{1}{8}$ °	
3.00	102 $\frac{3}{8}$ °	Fall of temperature = 1 $\frac{1}{8}$ ° F.

Experiment 3.—Rabbit; weight, 2 $\frac{1}{2}$ pounds. Black doe.

Time. A.M.	Drug.	Rec. temp.	Remarks.
10.55	103 $\frac{3}{8}$ °	
10.56	2 $\frac{1}{2}$ drops.	.....	Injected hypodermically in 30 minims of glycerin and water.
11.15	102°	
11.35	102°	
12.05	101 $\frac{3}{8}$ °	

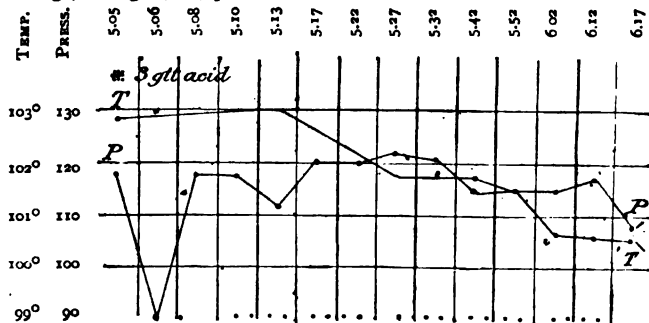
Time.	Drug.	Rec. temp.	Remarks.
12.40	101 $\frac{1}{8}$ °	
1.10	102 $\frac{3}{8}$ °	
1.40	102 $\frac{3}{8}$ °	Fall of temperature = 1 $\frac{1}{8}$ ° F.

These results are likewise supported by the experiments performed to determine the relation between the arterial pressure and the temperature in the normal animal (dogs), in all five of which a fall of temperature occurred. I think we may, therefore, consider proven that this acid lowers normal bodily temperature.

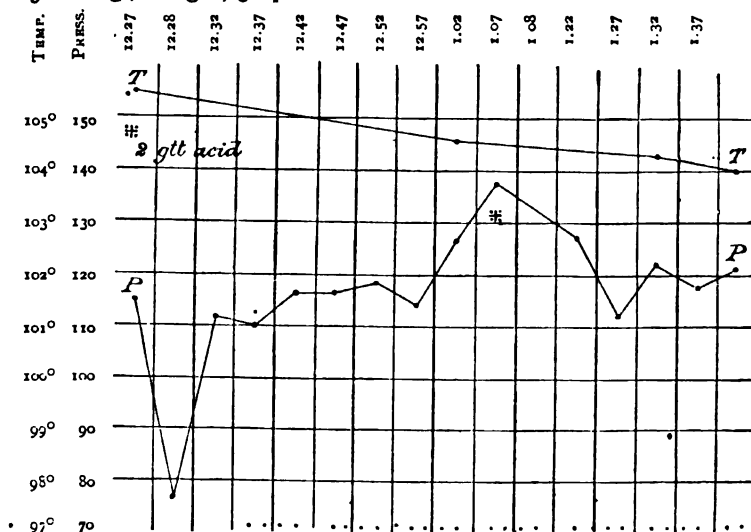
The charts showing the relationship between arterial pressure and the lowering of normal temperature by this drug indicate, at least in part, that there is a fall of pressure *pari passu* with the temperature, although in two of the five experiments the fall of arterial pressure was but momentary, and was followed by a rise. I can give no explanation of this variation. (Two charts left out for want of space.)

Charts showing Arterial Pressure and its Relationship to Temperature, also showing Fall of Temperature produced by Carbolic Acid when that Temperature is Normal.

Experiment 4.—Dog; weight, 14 pounds.



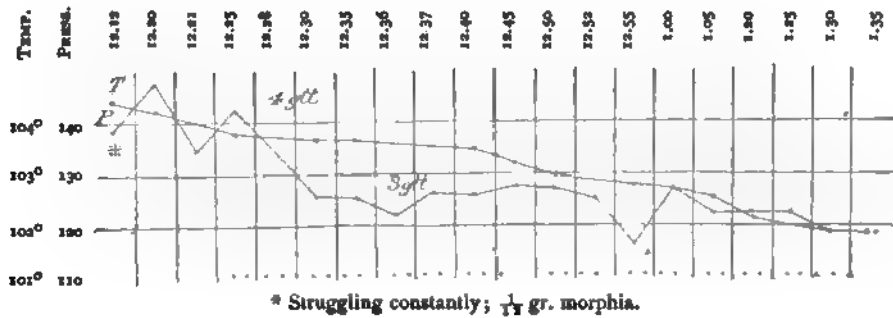
Experiment 5.—Dog; weight, 30 pounds.



* Struggling.

Chart showing Arterial Pressure and its Relationship to Temperature, also showing Fall of Temperature produced by Carbolic Acid when that Temperature is Normal (Continued).

Experiment 6.—Dog; weight, 42 pounds.

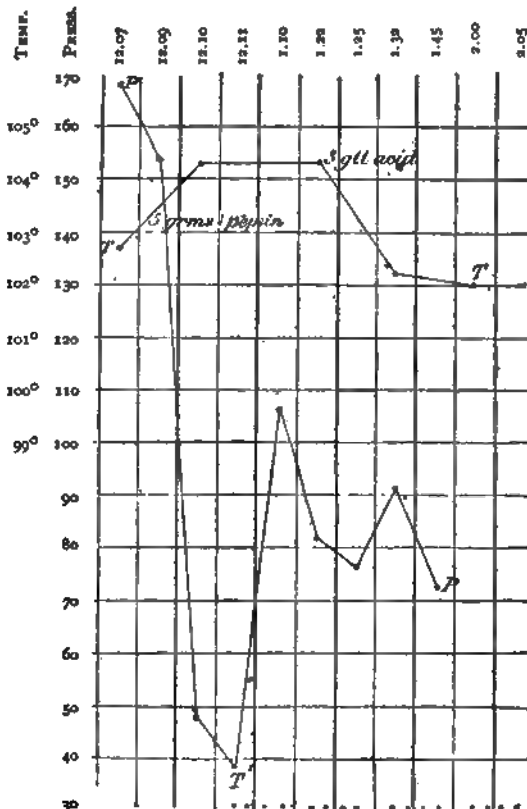


On examining the charts showing the influence of carbolic acid on fever, and the relationship existing between arterial pressure and temperature in fever, we note that in three of the five experiments there was a marked fall of temperature, while in the remaining two there was a rise, or, in other

words, the drug failed to control the pyrexia. In three of the experiments there was a fall of arterial pressure with a fall of temperature, in one there was a rise in pressure with a fall of temperature, and in another there was a fall in pressure with a rise in temperature. (One chart left out for want of space.)

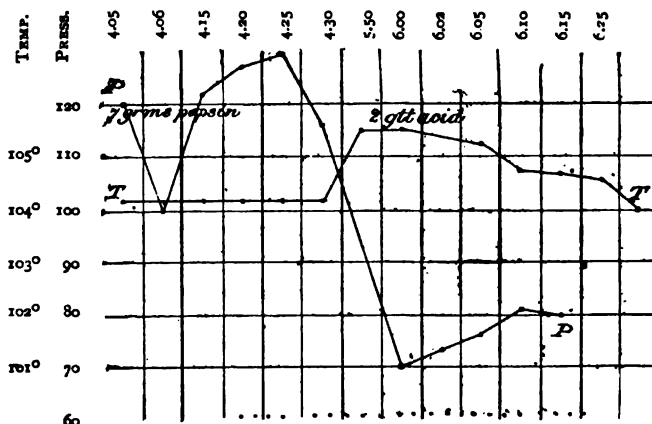
Charts showing the Relationship between Arterial Pressure and Temperature under the Influence of Carbolic Acid in Pepsin Fever.

Experiment 7.—Dog; weight, 19 pounds.

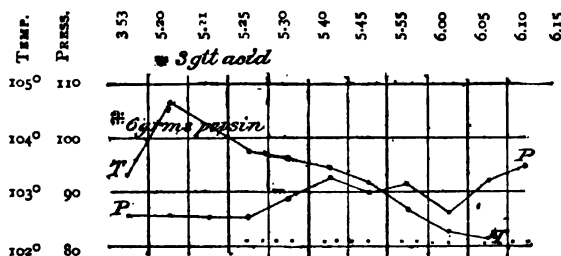


Charts showing the Relationship between Arterial Pressure and Temperature under the Influence of Carbolic Acid in Pepsin Fever (Continued).

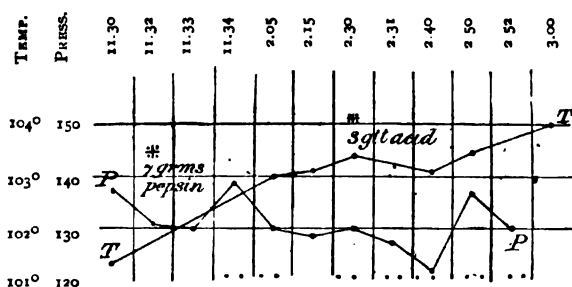
Experiment 8.—Dog ; weight, 25 pounds.



Experiment 9.—Dog ; weight, 26 pounds.



Experiment 10.—Dog ; weight, 20 pounds.



Notwithstanding the fact that the two last named experiments conflict with the first three, I think that we may say that carbolic acid in lowering pyretic temperatures likewise lowers arterial pressure, and this view is strengthened by the results of the experiments performed on normal temperature.

Calorimetrical experiments made to determine in what manner carbolic acid lowers normal bodily temperature are, as might be

expected from the irregular results obtained in the experiments just detailed, not very satisfactory.

It will be noted that in some instances production or dissipation were affected alone or together, while in others one function was decreased while the other was increased.

As the writer used the greatest care in the performance of the experiments there is but little room for fallacy, and, in view of the irregular action of the drug, it would seem

probable that it possesses no particular influence on either function, but may reduce temperature in some instances by acting on both functions.

Experiment 11.—Dog; weight, 18 pounds.

Time. P.M.	Rec. temp.	Box temp.
3.10	103.6°	57.00°
4.10	105.0°	57.95°
	1.4°	.95°
4.15	3 drops carbolic acid into jugular.	
4.25	104.5°	58.05°
5.25	105.2°	59.40°
	.7°	1.35°

Hourly dissipation of bodily heat.....	115.900
Hourly production of bodily heat.....	134.800
Hourly dissipation of heat after drug.....	164.700
Hourly production of heat after drug.....	174.150

SUMMARY.

Hourly dissipation of heat before drug.....	115.900
Hourly dissipation of heat after drug.....	164.700

Hourly gain of dissipation after drug.... 48.800

Hourly production of heat before drug.....	134.800
Hourly production of heat after drug	174.150

Hourly gain of production after drug.... 39.350

Result.—Gain of both functions, dissipation being most increased.

Experiment 12.—Dog; weight, 14.5 pounds.

Time. A.M.	Rec. temp.	Box temp.
10.35	102.7°	59.55°
1.50	103.0°	61.08°
	.3°	1.53°
1.55	3 drops of carbolic acid into jugular.	
2.00	102.7°	61.75°
5.15	103.6°	63.35°
	.9°	1.60°

Hourly dissipation of bodily heat.....	57.43400
Hourly production of bodily heat.....	58.43784
Hourly dissipation after drug	60.06152
Hourly production after drug	63.07304

SUMMARY.

Hourly dissipation of heat before drug.....	57.43400
Hourly dissipation of heat after drug.....	60.06152

Hourly gain of dissipation after drug... 2.62752

Hourly production of heat before drug.....	58.43784
Hourly production of heat after drug.....	63.07304

Hourly gain of production after drug... 4.63520

Result.—Gain of both functions, production being most increased.

Experiment 13.—Dog; weight, 29.5 pounds.

Time. A.M.	Rec. temp.	Box temp.
10.35	103.5°	55.65°
11.35	103.6°	56.70°
	.1°	1.05°
11.55	4 drops carbolic acid into jugular.	
12.00	104.0°	56.50°
1.00	104.1°	57.40°
	.1°	.90°

Hourly dissipation of heat..... 128.100

Hourly production of heat..... 129.575

Hourly dissipation of heat after drug..... 109.800

Hourly production of heat after drug..... 111.275

SUMMARY.

Hourly dissipation of heat before drug.....	128.100
Hourly dissipation of heat after drug.....	109.800

Hourly loss of dissipation after drug... 18.300

Hourly production of heat before drug..... 129.575

Hourly production of heat after drug..... 111.275

Hourly loss of production after drug..... 18.300

Result.—Loss of both functions equally.

Experiment 14.—Dog; weight, 22 pounds.

Time. P.M.	Rec. temp.	Box temp.
1.15	103.4°	57.20°
2.15	103.5°	58.45°
	.1°	1.25°
2.40	4 drops carbolic acid into jugular.	
2.45	103.4°	57.95°
3.45	103.3°	58.85°
	.1°	.90°

Hourly dissipation of bodily heat..... 155.500

Hourly production of bodily heat..... 157.150

Hourly dissipation after drug 109.800 |

Hourly production after drug 108.250 |

SUMMARY.

Hourly dissipation before drug.....	155.500
Hourly dissipation after drug	109.800

Hourly loss of dissipation after drug.... 45.700

Hourly production of heat before drug..... 157.150

Hourly production of heat after drug..... 108.250

Hourly loss of heat production after drug. 48.900

Result.—Loss of both functions, production being the more decreased.

Experiment 15.—Dog; weight, 25 pounds.

Time. P.M.	Rec. temp.	Box temp.
3.50	105.5°	59.15°
4.50	104.6°	60.30°
	.9°	1.15°
4.55	4 drops carbolic acid into jugular.	
5.00	104.6°	60.00°
6.00	105.7°	60.90°
	1.1°	.90°

Hourly dissipation of heat before drug.....	140.300
Hourly production of heat before drug.....	123.425
Hourly dissipation of heat after drug.....	109.800
Hourly production of heat after drug.....	130.425

SUMMARY.

Hourly dissipation of heat before drug.....	140.300
Hourly dissipation of heat after drug.	109.800

Hourly loss of dissipation after drug..... 30.500

Hourly production of heat before drug.....	123.425
Hourly production of heat after drug.....	130.425

Hourly gain of production after drug.... 7.000

Result.—Loss of dissipation, gain of production.

The results obtained in the calorimetrical study of this acid on fevered animals are more concordant than those reached in the study on normal dogs, for we find that in Experiments 16, 18, and 19 heat production is very positively decreased, while in every instance where there was no decrease in production there was an increase in dissipation, which, while it did not always amount to a large enough quantity to overcome an increased production, had an effect in lessening the rise in temperature which might come on.

In one experiment, however (No. 20), production was very greatly increased over dissipation, simply because the thermogenic agent caused a rise in temperature which the acid could not affect. It would seem from these experiments that the acid lowers temperature by acting on both heat production and dissipation, the production being generally most affected.

Experiment 16.—Dog; weight, 21 pounds.

11.25 Rec. temp. 103.7°. Injected 2 grms. filtered pepsin.

Time. P.M.	Rec. temp.	Box temp.
12.02	105.0°	57.00°
1.02	104.7°	58.40°
	.3°	1.40°
1.05	3 gtt. of carbolic acid into jugular.	
1.10	104.8°	58.85°
2.10	102.8°	59.65°
	2.0°	.80°

Hourly dissipation of heat.....	170.800
Hourly production of heat.....	166.075
Hourly dissipation of heat after drug.....	97.600
Hourly production of heat after drug.....	66.100

SUMMARY.

Hourly dissipation of heat before drug.....	170.800
Hourly dissipation of heat after drug.....	97.600

Hourly loss of dissipation after drug.... 73.200

Hourly production of heat before drug.....	166.075
Hourly production of heat after drug.....	66.100

Hourly loss of production after drug..... 99.975

Result.—Loss of both dissipation and production. Loss of production very great.

Experiment 17.—Dog; weight, 16 pounds.

10.35 Rec. temp. 103.5°. Injected 2 grms. filtered pepsin.

Time. P.M.	Rec. temp.	Box temp.
2.15	105.2°	59.85°
3.00	104.1°	60.06°
	1.1°	.21°
3.01	3 drops of carbolic acid injected into jugular.	
3.12	104.0°	60.80°
3.57	103.1°	61.35°
	.9°	.55°

Hourly dissipation of heat.....	32.025
Hourly production of heat.....	15.525
Hourly dissipation after drug.....	83.875
Hourly production after drug.....	70.375

SUMMARY.

Hourly dissipation of heat before drug.....	32.025
Hourly dissipation of heat after drug.....	83.875

Hourly gain of dissipation after drug..... 51.850

Hourly production of heat before drug.....	15.525
Hourly production of heat after drug.....	70.375

Hourly gain of production after drug..... 54.850

Result.—Gain of both dissipation and production, production being affected most.

Experiment 18.—Dog; weight, 34 pounds.

1.40 Rec. temp. 104°. Injected 2 grms. filtered pepsin.

Time. P.M.	Rec. temp.	Box temp.
4.00	105.6°	61.50°
5.00	105.7°	62.95°
	.1°	1.45°
5.02	Injected 4 gtt. of carbolic acid into jugular.	
5.20	105.6°	62.95°
6.20	104.0°	64.05°
	1.6°	1.10°

Hourly dissipation of heat.....	176.900
Hourly production of heat.....	179.450
Hourly dissipation after drug.....	134.200
Hourly production after drug.....	93.400

SUMMARY.

Hourly dissipation before drug.....	176.900
Hourly dissipation after drug.....	134.200

Hourly loss in dissipation after drug.... 42.700

Hourly production of heat before drug..... 179.450
 Hourly production of heat after drug..... 93.400

Hourly loss of production after drug.... 86.050

Result.—Both functions decreased, the production being greatly decreased.

Experiment 19.—Dog; weight, 14½ pounds.

10.30 Rec. temp. 102.2°. Injected 1 grm. filtered pepsin.

Time. A.M.	Rec. temp.	Box temp.
10.50	104.0°	57.85°
11.50	103.5°	58.80°
	.5°	.95°
11.53	3 gtt. carbolic acid injected into jugular.	
11.55	103.5°	58.75°
12.55	99.0°	59.70°
	4.5°	.95°

Hourly dissipation of heat..... 115.9000
 Hourly production of heat..... 110.4625
 Hourly dissipation after drug..... 115.9000
 Hourly production after drug..... 66.9625

SUMMARY.

Hourly dissipation before drug..... 115.9000
 Hourly dissipation after drug..... 115.9000

Hourly dissipation after drug unchanged.

Hourly production before drug..... 110.4625
 Hourly production after drug..... 66.9625

Hourly loss of production after drug... 43.5000

Result.—Dissipation not affected. Production greatly decreased.

Experiment 20.—Dog; weight, 28 pounds.

2.10 Rec. temp. 103°. Injected 2 grms. filtered pepsin.

Time. P.M.	Rec. temp.	Box temp.
3.15	104.2°	60.00°
4.15	104.7°	61.65°
	.5°	1.65°
4.18	3 gtt. carbolic acid into jugular.	
4.20	104.6°	61.60°
5.20	106.3°	63.50°
	1.7°	1.90°

Hourly dissipation of heat..... 203.300
 Hourly production of heat..... 213.800
 Hourly dissipation after drug..... 231.800
 Hourly production after drug..... 288.500

SUMMARY.

Hourly dissipation of heat before drug..... 203.300
 Hourly dissipation of heat after drug..... 231.800

Hourly gain of dissipation after drug.... 28.500

Hourly production of heat before drug..... 213.800
 Hourly production of heat after drug..... 288.500

Hourly gain of production after drug..... 74.700

Result.—Both increased, production being more increased than dissipation by a considerable amount.

CONCLUSIONS.

1. Carbolic acid possesses considerable power in lowering normal bodily temperature.
2. It possesses more influence over pyretic temperature than does salicylic acid, generally preventing a rise or causing a fall of temperature, but sometimes failing to do so.
3. Carbolic acid probably decreases arterial pressure when lowering temperature.
4. That its mode of decreasing normal bodily temperature is as yet not fully understood, although it would seem probable that it acts on both heat functions.
5. When influencing bodily heat in fever it acts chiefly by decreasing production, although it affects both functions.

CURIOSITIES OF THERAPEUTICS.

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III. PRE-HISTORIC AND MYSTICAL MEDICINE.

MOST aptly has it been said that "The proper study of mankind is man." Certainly there has never been offered a problem more abstruse, extended, or difficult of solution than the origin of the human race, and the causes that led to its present mental and physical development. Even those whose orthodoxy is so far above reproach as to spurn the shadows of the doctrine of Evolution as "unclean," do not hesitate to grope among the secrets of the primitive and infinite; and it is no anomaly to discover in the most ardent exponents of a miraculous creation as applied to Life and Intelligence, eager students in the domain of anthropology.

So long as the Assyrio-Chaldaic traditions and anachronisms perpetuated in the Pentateuch* were unreservedly accepted as Divinely

* Not until after the second century was it demanded of human credulity to accept the Pentateuch as the work of the great Hebrew law-giver, or even as of *one man*. The idea originated not among the higher ranks of Christian philosophers, but the more servile Fathers of the Church, whose writings evince they were neither very critical nor very learned persons. The ablest men of every age, Christians and Jews alike, have repudiated these claims, and their decisions have been based upon

inspired history, and a Hebrew "Adam"* deemed both the type and derivative of all humanity and intelligence,—his vocalizations even the foundation of speech and thought,—little was demanded of the mysterious Past. But, when it came to be recognized that the language of Israel is neither primitive nor exclusively derivative; that cosmogonical mensuration could no longer be compressed within the limits of four brief figures; that civilization antedated Scripture and its chronology; that the genealogy of Shem is but a succession of names representing a few out of existing millions of families made to pass before a veil of darkness the momentary liftings of which gave glimpses of great movements that had been long going on behind; that Asia was the seat of mighty empires, and Africa the home of arts and sciences at a time when Noah is accredited with laying the keel of the ark;—a wide vista for study and research was opened, the extent of which even yet is beyond the power of the human understanding to grasp.

For centuries the intelligence of the world has sought in the "Lands of Extinct Monarchies"—Egypt, Arabia, Syria, and Asia Minor—more definite information regarding the early history and development of the human race, ignoring the teaching of geology that the *Western* is the older of the Hemispheres and tropical American latitudes

the intrinsic evidence of the books themselves. These furnish conclusive indications of being derived from two narratives, each distinct and independent, and often contradictory. The claim of Mosaic authorship was not advanced by the early Church authorities, nor did it obtain until deemed essential to the unity of the doctrine of the *Atonement*. Esdras expressly declares the books were written by himself and five others in the space of forty days (2. xiv. 20–44), being led thereto by inspiration and a desire to perpetuate "from the beginning" the history of a race whose records had all been destroyed. True, the writings of Esdras are held apocryphal, but not by any evidence that will withstand modern criticism (see McClintock and Strong's "Biblical, Theological, and Ecclesiastical Cyclopædia," vol. iii. pp. 293–296); indeed, the Hebrews and more intelligent Fathers ever upheld its canonicity. But whether or no, the Pentateuch presents peculiarities that conclusively demonstrate it was composed on the banks of the Euphrates instead of in the deserts of Arabia. It abounds with Chaldaisms, it speaks of the Mediterranean as lying in the *West*, which no Egyptian would do, and the scenery and properties are all Assyrian. (See Draper's "Conflict between Religion and Science," pp. 220–223.)

* Unaccountably the errors peculiar to early and imperfect translation yet persistently obtain. In Genesis, the *Adam* and *ish* of the original Hebrew are accepted as synonymes for *man*, though scholars have long understood the one is discriminative and specific, the

the probable birthplace of terra firma.† Oriental research, in spite of the magnificent results accruing thereto, have ever been unsatisfying as regards evidences of periods antedating those of existing history, and of arts and sciences that were not contemporary with or derived from the Phœnician and Egyptian:‡ the more eager the search, the further removed appeared the bridge that would span the gap existing between early civilization and a primitive nomadism. Such was the status of anthropology up to within the last decade.

Unfortunately, the lifting of the veil was not

other generic. For instance, *Genesis* i. 26, 27, should read, "*Elohim* (God) said, *Let us make Adam in our image, . . . and Elohim created the Adamite* (ha-Adam) *in his own image . . . male and female created he them.*" Subsequently, throughout both the Elohist and Jehovistic narratives, *Adam* with the definite article (*ha*) prefixed is employed exclusively for the descendants of a defined individual. The Hebrew invariably employs *ish* (feminine *ishah*) as descriptive of humanity at large. "*And it came to pass . . . that the sons of God* (Adamites) *saw the daughters of men* (ishah) *that they were fair; . . . and Jehovah said, My spirit shall not strive with the Adamite forever; . . . when the sons of God* (Adamites) *came in unto the daughters of men* (ishah); . . . and it repented Jehovah that he had made the Adamite (ha-Adam) *on the earth* (adamah). . . . Jehovah said, *I will destroy the Adamite* (ha-Adam)," etc. (*Genesis* vi. 2, 3, 4, 6, 7.) Even more marked is the distinction in *Psalms* xlix. 1, the reading of which, as given by competent Hebrew scholars, is, "*Give ear all ye inhabitants of the world, both Adamites and sons of men!*" Those who desire to pursue this topic more critically will find an exhaustive article in one of the earlier volumes of *Scribner*.

† See Sir Charles Lyell's "Principles of Geology." Reber ("History of Ancient Art," p. 1) remarks, "It is a curious chance that the most ancient monuments of human civilization should stand upon a land that is the youngest geological formation of our earth."

‡ The United States, while founding schools of archaeology in Egypt and Greece, has persistently ignored the treasures of the American continents. In the first "Annual Report of the Archaeological Institute of America" it is authoritatively declared that these treasures pertain "to a race that never attained a high degree of civilization," and that has "left no trustworthy records of continuous history." Again, "It was a race whose intelligence for the most part was of a low order; whose sentiments and emotions were confined within a narrow range, and whose imagination was never quickened to find expression of itself in poetic or artistic forms of beauty. *From what it was or what it did, nothing is to be learned that has any bearing on the progress of civilization!*"

This without taking the trouble to make a single examination, and at a time when European scientists, with the reverence true learning begets, were turning their attention to America in quest of the origin of those ancient civilizations which they had been unable to find in countries where they once flourished!

permitted those upon whom the privilege should naturally have fallen, but to able scholars and antiquarians of the "*Old World*" so called, whose eyes were not blinded by the ignorant pretensions of pseudo-science; and the little that has come to us is the sequel of labors of the *Société* and *Congrès des Américanistes*, the archæological department of the *University of Cambridge*, and the individual exertions of Monsieur and Madame Le Plongeon, M. Désiré Charnay, and Mr. Maudslay. Attracted to Central America by the reports of Stephens and Norman, years of toil and hardship have been devoted to the unravelling of the mysteries of Yucatan, Honduras, Guatemala, and Southern Mexico, whereby has been secured an amount of information that is positively startling in its bearings upon history, geography, eschatology, theology, tradition, and art. It gives a better and deeper insight into the sciences, including mathematics, therapeutics, physiology, and psychology; affords a key to mysterious and obscure myths and Orientalisms; and has also unlocked the more secret records of philology. During this period silent and hitherto impenetrable forests were traversed, searched, and forced to yield up the ghosts of a forgotten, mysterious, and progressive civilization; ruins cleared, excavated, ransacked, and photographed; temples, pyramids, palaces, vaults, tombs, tumuli, and astronomical and memorial chambers explored; obelisks and *bas-reliefs* uncovered that rival those of Egypt and Assyria;* languages acquired, hieratic alphabets mastered, and hidden records, and glyphic and other mural sculptures, deciphered and transcribed. In the city of Uxmal was found glyphically inscribed the narrative of Adam and Eve, along with the history of their three sons and two daughters; and both here and at Chichen-Itza numerous other familiar traditions, no longer mere insignificant and fragmentary Hebrew or Assyrio-Chaldean myths without order or sequence, appear as part of the consecutive history of a nation whose existence by some thousands of years antedates accepted chronology. The original of the "Temptation in the Garden" and "Fall of Man"† is told,

* See "Yucatan, its Ancient Palaces and Modern Cities," by M. Augustus Le Plongeon; also, by the same author, "Sacred Mysteries among the Mayas and Quiches;" "The Monuments of Mayax and their Historical Teachings;" "Vestiges of Antiquity;" "Vestiges of the Mayas;" "The Inhabitants of Peru and their Civilization."

† Appendix K.

and none the less valuable because shorn of its Chaldaisms, and the interpretation placed thereupon by Anselm and the superstitious monks and prelates of the earlier centuries of our era;‡ and the fratricidal strife depicted in the fourth chapter of *Genesis* is given not only as a part of this tragedy, but appears to have been the first act thereof.§ The identity of the unfortunate *Abel* of Hebrew literature, *Abal* of the Assyrio-Chaldeans, *Bali* of the Sanskrit, *Balaam* of Petra, *Osiris* of Egypt, and Prince *Coh* of Mayax, is apparently beyond dispute.|| Sculptures of his wife, mother, sister, and children, weeping over his ensanguined corpse and preparing for cremation and the formalities to be paid to his *manes*, appear on the façades of numerous structures; while deep in the interior of a mound, in a sepulchral chamber of hewn and massive stone, was exhumed his statue with tablets of name and rank, the urn containing his heart, the ornaments that he wore, and the blade of flint that struck the fatal blow, all of which are now in the possession either of the National Museum of the Republic of Mexico or of their discoverer.¶

Not the least important of the records brought to light are those that give back to us the great island continent of Herodotus, Solon, Euclid, and Plato, so long deemed fabled, and of which the Azores, Bahamas, Madeiras, Canaries, Cape de Verds, and Lesser Antilles are the mortuary remnants.** Atlan or Atlantis, no longer a myth, is become a glorious reality occupying a place in history, geography, and archæology, second in interest only to that of Mayax itself, since

‡ In the earlier ages of Christianity the story of the "Fall" had not been incorporated as an essential part of the creed of the "Faith." It was Anselm that gave to it the precision as now taught in Protestant and Romish Churches. See "Conflict of Religion and Science," Draper, pp. 57, 222.

§ Appendix K.

|| It is significant, to say the least, that the names of the various personages mentioned in the different accounts of this fratricide are practically identical. See Appendix K.

¶ The manifest value of these treasures historically, as well as their connection with the antiquities of the Republic, was such the Mexican Government would permit only a portion to pass out of the country. The statue of Coh, and the tablets engraved with his titles and rank and appearing as head ornaments, as well as numerous other Maya antiquities (or their copies) referred to in this paper, were viewed by the writer during a recent visit to the "Sister Republic."

** Wyville Thompson's "Voyage of the Challenger." Also Appendix L.

it must needs have been the highway over which passed the germs of those arts, sciences, religions,* traditions, and languages we call our own. That the island was once the scene of human greatness, and the theatre of a civilization superior to that of Egypt in her palmiest days, is already established; and lying exactly in the track of the greatest cataclysms known to our globe, we can readily imagine a convulsion of Nature that would at the same moment engulf a city in Jamaica and another in Portugal, might also submerge a continent.

The discovered hieratic alphabet of ancient Mayax affords convincing evidences of being the derivative of the hieratic characters of the twin civilizations of Egypt and Chaldea, whence was obtained our own written language; and by its aid have been mastered the secrets of the *Troano*, *Popul-Vuh*, and *Cak-chiquel* MSS.,—three of the four sacred books that escaped destruction at the hands of Bishop Landa and his fanatical following when, at the termination of the twenty years' war termed the "Conquest," Rome and the Inquisition undertook to regulate both the temporal and spiritual affairs of "New Spain." We also find that when Uxmal was the political capital of an empire that extended its influence over *three*, and indirectly over *six*, continents, the city of Chichen-Itza was the seat of letters and the metropolis not only of the civilization of Mayax and its dependencies, but of the world. It was the Mecca of science, philosophy, and art, embracing literature, medicine, theology, astronomy, and astrology, and was sought by the wise men of Africa, Europe, and Asia, including India and far away Manchouria and Japan,† that they might sit under the teaching and higher wisdom of the *H-Menes*, or sacred priests. Here progressive Hindus, Thibetans, Mongolians, Aryans, Chaldeans, Ethiopians, Egyp-

tians, Iberians, and Atlans‡ met to worship at the same shrines and altars, and to offer homage to the mysterious deified *Intelligence*, or to sacrifice by casting themselves headlong into the sacred well from which the city derived its name.

Our information regarding the peculiar religious tenets of ancient Mayax is as yet too meagre to admit of definite interpretation or description, though it appears to have been a highly educational form of Theosophism, but triflingly related, however, to the modern doctrine that obtains under this name. By comparing the little knowledge that thus far has been vouchsafed, with that possessed of the faiths of races lower in the scale of civilization, we discover progressive intellectual development by series, the sequence being almost without shadow or flaw.§

‡ The *Troano*, and the sculptures and engraved records unearthed by Charnay, Maudslay, and Le Plongeon, all depict or describe individuals received in Mayax as honored guests, who present vividly many of the race characteristics of our era: bearded Assyrians, or men reminding one of the Afghans of the present; classic Aryans; sensual Egyptians; flat-nosed Ethiopians; and a dark race with red lips possessed of magnificent *physique* supposed to be Atlans, and that would seem to be nearly akin to the Minas of the Benin region (a tribe familiar with the teachings of the Koran and Arabic literature, superior in intelligence to the Arabs, and nothing in common with the negro of the type with which we are most familiar). Among scores of sculptures and statues found by M. Charnay was a negro's head of life-size, perfectly designed even to the curly hair; another, the face of a woman that, save for a battered nose, exactly resembles the present European type, reminding its discoverer of the "Venus of Milo"; and at Tula in the state of Chiapas was unearthed a mould, a cast of which in paraffine exhibited an Aryan beauty with locks arranged in modern fashion, crowned with a braid of false hair. (*North American Review*, Sept. 1880.)

§ The little that remains to us of the history of the *Natchez* and other lower Mississippi tribes, and of the Moquis or Pueblos, is evidence they were intermediates of the existing aborigine and the ancient *Skyris* and *Quichuas* of Ecuador, Bolivia, and Peru,—the latter an offshoot of the *Quiches*; and yet the descendants of Manco Capac (an imitator of the Mayax *Cans*) were not so far advanced in the civilized scale as the Chontales and other non-Maya tribes of Central America, who were yet inferior to the people of Yucatan. The Aztecs more nearly resemble the ancient Quiches. Slavery and Romanism, however, stamped out the last vestiges of civilizations in most respects superior to that of the Latin conquerors. A remnant—now seen in the final stage of reversion to primitivism—yet lingered among the Pueblo tribes who, shaking off the yoke of their oppressors, to some extent escaped the contaminating influence of European immigration, and preserved in part the language, customs, traditions, and religious rites of their early ancestors. This is borne out by the

* The evidences collected by Le Plongeon, Charnay, and Maudslay, and that are verified by the ancient *Troano* MS., have been supplemented by: First, the more recent discoveries by the second-named gentleman, as narrated in the *North American Review* for September, 1880; second, in 1884, some workmen engaged in excavating upon the Caribbean coast of Nicaragua unearthed a huge rock covered with sculptures and glyphs that, when deciphered by experts, were found to be a brief record of the submergence of a vast extent of territory that formerly existed in the expanse measured by the central Atlantic and Saragossa Sea: an event, according to Egyptian authority, that took place somewhere about 9600 B.C.

† Sacred Mysteries of the Mayas and Quiches, pp. 50, 53, 57, 61, 73, 95.

In the *H-Menes*, or pontiffs, of Chichen-Itza is seen an elevated type of the *Quiche* priesthood that in turn ranks higher than the sacerdotal orders of the *Incas*, between whom and the *Shams** of primitivism stand the sacred orders of Zuni. Again, *Kitche-Manit*, or the "Great Spirit" of the nomad,† as the result of broadened intelligence and education on the part of his worshippers and following, had been lifted to a higher plane, becoming more powerful, terrible, and unapproachable, save perhaps to the favored few,—"*the elect*,"—at the same time more munificent and complete. The "*medicine*" lodge,‡ no longer a mere hut, the esoteric wisdoms of which were concealed from the vulgar by the skins of wild beasts or the rinds of trees, is transformed into temples of hewn stone, grand in their massiveness, palatial in their apartments and appointments, and impressive by reason of the knowledge therein hidden, including the rites and ceremonies sacred alike to Deity, philosophy, and art. And the ordeals, though less savage, less vulgar, were become even more severe and appalling with each step that approached the unknown and carefully guarded "*Holy of Holies*"; the initiations were calculated to progressively educate, and yet test to the utmost the physical and intellectual capacity and endurance of those who sought the closest possible communion with the mysterious power deified as the "*Supreme Intelligence*."§

little Mr. Frank Cushing has revealed to us of the *Mysteries* yet practised among the Zunis, to which he has been admitted. Of course, I do not pretend to say these peoples and races, *all*, are absolute links in the chain, but merely *typical* of such links.

* THERAPEUTIC GAZETTE, April, 1887, p. 234.

† Ibid., p. 229.

‡ Ibid., p. 236.

§ See Appendix M; also the scriptural record of *Enoch* and *Melchizedek*. It is an open question whether the man that "*walked with God*" and subsequently "*was not*," is not identical with *Malki-Tse-dek* (*Melchizedek*). Evidently both were high pontiffs of the *Mysteries* in some part of the world, whether in the plains of Arabia or groves of Mayax. *Enoch*, *Chanok*, or *Hanoch*, as the word is variedly rendered, means simply "*Initiated*," and *Malki-Tse-dek* a "*Priest of Elyon*," or "*First among the Holy*." Says Rev. Dr. McClintock, "There is something surprising and mysterious in the first appearance of Melchizedek and in the subsequent reference to him. Bearing a title which would in after-ages be recognized as that of a sovereign, bringing gifts which recall to Christians the Lord's Supper, this Canaanite crosses for a moment the path of Abraham, and is unhesitatingly recognized as a person of higher spiritual rank than '*The Friend of God*.' Disappearing as suddenly as he came, he is lost to sacred writings for a thousand years, and then a few emphatic words bring him into sight as a type of the

In the sacred temples or colleges was inculcated the majesty and greatness of the *Supreme* in Nature and in Art, and likewise of the existence of a *power* between, or a psychic essence emanating therefrom, superior to Life and Matter! To reach this power and render it amenable to and a part of the understanding, was the high aim of the *Mysteries*, the pathway being progressive knowledge and intelligence. In no sense were the colleges schools of pagan polytheism, save, perhaps, indirectly. While adoration was paid the celestial bodies, the mastodon,||

coming of the Lord of David. . . . The faith of early ages continued to invest his person with superstitious awe, and a mysterious supremacy came also to be assigned to him, because of his having received gifts from the Hebrew patriarch." ("Biblical, Theological, and Ecclesiastical Cyclopædia," vol. vi. p. 87.)

Enoch, or Cān-ok, was the son of *Cāin*, names so like *Cay* and *Can* as to suggest he was the high pontiff of Mayax and brother of *Aac* (Can II.), *Coh*, *Moo*, and *Nicte*. A *Cān-ok* is also mentioned as a son of Jared ("*Next Descended*"), and by Jude termed the "*Seventh from the First*," and probably a *seventh* high pontiff whose translation (*Genesis* v. 24) may have been that of apotheosis merely. The book of *Enoch*, or *Hanoch*, which is spoken of by Zohar as "an independent Hebrew production handed down from generation to generation," a MS. copy of which was rescued from oblivion and brought from Abyssinia in 1773, is little known owing to its supposed apocalyptic character. However, McClintock assumes it to be the identical book quoted by Jude ("Bib. Theolog. and Eccles. Cy.," vol. iii. p. 226), and declares that it "*exhibits a great advance of thought within the limits of revelation in each of the great divisions of knowledge*" (p. 227). Among other things it teaches the spirits of the wicked will be taken from *sheol* and consigned to a place of greater discomfort if not fitted for better things. Compare this with the *happy hunting-grounds* of the nomad (THERAPEUTIC GAZETTE, April, 1887, p. 231). Le Plongeon sees in the book a key to the ancient *Mysteries*, and remarks the similarity of its utterances to those of the *Popol-Vuh*, the sacred book of the *Quiches*. (Appendix N.)

|| The mastodon in Egypt became the bull *Apis*, in consequence of the latter being the largest animal of its class (*Mammalia*) known to the country. In India it became the elephant, the deity of wisdom (*Ganesha*), whose body is painted *red* or *copper color*. The *Mystai* were taught as the Brahmins are taught to-day, that this emblem, whether a *red* mastodon, *red* elephant, or *red* bull, should be regarded as an *emblem of the soul*, as *embodying power and greatness*.

Strange to say, *Adām* has the significance of *red* or *first red ruler*; *red* is the color of the American aborigine, and *red* was a symbol of nobility or race, and divine descent among the Egyptians. However, on the façade of the *Kuna*, or "Temple of Divine Intelligence," in Chichen-Itza is seen a tableau of adoration of the mastodon, over the trunk and between the eyes of which is a human face surmounted by the royal crown. The corona of the upper cornice is the emblem of the *serpent*, the token of the royal *Cans*; that of the lower is formed

the serpent,* the parrot, the palm,† and even apotheosized members of the human family, such were merely tributes to learning, and susceptible, among the higher *Mystai* or initiated, of esoteric explanation whereby the figures were resolved into symbols of the power of Nature, each within its own kingdom or class, and reconciled to the monotheism expressed by *The Supreme Intelligence*. Indeed, idolatry, like the manifestations of some forms of Christianity, developed from the ignorance and debasement of the masses proportionately with the decline of education and art, and the subversion of the lofty aims inculcated by the *Mysteries* to the debauchery of politics and sensuality. Maya monotheism begat polytheism by esoterically ascribing a triune existence to the *Supreme*,‡—the “*Creator*,” the “*Engenderer*,” and the “*Giver of Being*.” In a less advanced *Degree* of the *Mysteries*, the *Trinity* was pictured as a *Quinquenate*,§ still lower a *Septenate*,|| and in the first or lowest of all as a *Duodenate*,¶ whence the mystic power ascribed to the figures 3, 5, and 7. From the latter the vulgar evolved deities at will (aided by the political machinations of individuals), having no conception of the true meaning of the *Supreme Deity*, or of the figures that to the initiated conveyed evidences of his universality. A study of the polytheism of Egypt, Chaldea, India, and China evidences this; moreover, it is well understood on both sides of the Atlantic that an unknown but mystical significance has ever been ascribed to these numbers, and that by the Brahmins, Buddhists, Guebres, Mahatmas, and “*Adepts*” they are held to be potentially, if not Divinely, endowed, or, as Pythagoras puts it, “*The vehicle of life containing both soul and body*.”**

From Chichen-Itza Maya civilization extended its influence to the farthest parts of the globe, exercising a controlling power

among heterogeneous nations. History, art, philosophy, medicine, and the sciences in general were taught as the *Mysteries* gained ground, and everywhere the country whence the latter originated was regarded with veneration and respect. To-day, also, we encounter the word *Maya* in many regions, often most remote one from another,—in Europe, Africa, Asia, as well as the two Americas,—and always with the attached meaning of *original* or primitive power and wisdom; and wherever found, are also discovered traces of the language, customs, and religion of ancient Mayax, and its cosmogonical and historical traditions embodied in sacred writings and regarded as the history of mankind.†† By comparing the hieratic alphabets of Chaldea and Egypt with that of Mayax, the proposition that the former are indebted for their origin to the latter becomes something more than a mere surmise: the relationship is unmistakable. The radical MÂ, or “*first*,” the equivalent of our letter *M*, in all three is the symbol of the universe. MÂ-YÂ means simply the “*first derived*” or “*first out of the water*,”—*terra firma*; MÂM stands for “*ancestor*”; AH-ÇAMÂ or AH-DAMÂ for “*first of earth*” or *royal first*, a title given to but one of the *Cans* of Mâyax, while the others are designated as AHAU-MÂ, “*royally descended*.” Again, we find a brotherhood in India who from time immemorial have borne the name of MÂHÂ-ATMA, or the “*Soul of Souls*,” which exactly expresses their religious claims; and LA-MÂ, or “*that which has existed from the first*” (eternal truth), is the title of the Thibetan form of Buddhism. LÂB-MÂC, the “*Venerable*,” is identical with the *Râb-Mâg* of the Chaldeans, and is the designation of a high priest or pontiff; and MÂ-GI or MÂ-YI was applied to those possessed of the Maya knowledge (the *Mysteries*), and, like the title of *Doctor* to-day, obtained among charlatans as well as the learned. From the writings of Daniel we gather the *Mâgi* or *Mâyi* of his day were *strangers possessed of special learning and speaking an unknown tongue*,‡‡ and that they were a powerful society, esoteric and quasi-religious in character, who passed their time in meditating upon questions of philosophy and science, or in practising divination, astrology, therapeutics, and psychomancy. In the last, however, they were surpassed by the “*Son of David*” and by his companions, who, being of the blood royal, presumably had attained the highest rank in the Hebrew *Mys-*

of characters that read *Ah-âm*,—the “*first*,” or “*he of the throne*.”

* See p. 531.

† See p. 531.

‡ “*Sacred Mysteries of Mayas*,” pp. 53, 60–66, 91, 136. Appendix M.

§ *Ibid.*, pp. 63, 65, 142.

|| *Ibid.*, pp. 143, 149.

¶ *Ibid.*, pp. 48, 96.

** In the THERAPEUTIC GAZETTE for May last (p. 301) I commented upon the fact that *Shams* and *shamman* lodges are the repositories of the facts, traditions, and other knowledge of Primitivism, under the absurd title (as rendered) of “*medicine*.” See also U. S. History as to the sacred lodges of the Natchez tribe in connection with an intended (universal) massacre of the whites!

†† Appendix M.

‡‡ Books of *Daniel*.

teries, and, moreover, by order of Nebuchadnezzar, had also acquired all the "wisdom" of the sacred colleges of Chaldea. In the short space of three years Daniel had risen to Chief Pontiff or "Venerable" of the kingdom, and undoubtedly it was his better knowledge of the means of procuring *ecstasia** and the clairvoyant state, that procured him honors and caused him at the same time to decline the luxuries ("delicacies") of the king's table. As the higher and more complete wisdom of the *Mysteries* inculcated *caste*, we can imagine the Māyi, foreigners from India,† probably, who had settled in Babylon for "profit and gain," were not the most exalted of the sacred ranks, for it is rare indeed that any considerable number of emigrants represent the best learning of the country of their birth.

The totem of the primitive kingdom of Mayax was a *serpent*, typical of water or the sea,‡ bent to represent the coast of Yucatan, while the peninsula itself was often typified as a *garden*. But the insignia of the *Empire* of Mayax, which extended from the isthmus of Darien to that of Tehuantepec, was sometimes a tree§ with its roots in the continent of South America, the peninsula of Mayax being the chief branch, and sometimes (more frequently) a *serpent with an inflated breast*, the outlines of which exactly recalled the geographical contour of the country.|| This serpent was also employed as the emblem of royalty and apotheosized royalty as expressing wisdom second only to that of the Divine Intelligence, and as such it appears as a head ornament in sculptures and gravures. Also, this latter reptile is, manifestly, the "asp" of the Nile region, where it is frequently depicted wearing the crown of Lower Egypt, said crown being but the Maya royal appendage reversed,—the front looking backward; this reversal, perhaps as a mark of respect, and intended to inculcate the principle yet obtaining among the people of Yucatan, that as the child is *less*, it should always appear *inferior*, and in *homage* to the parent,—i.e., stand behind him.¶ Nine thousand and more years subsequent to the submergence of Atlan that interrupted communication between the two hemispheres

for a hundred and half a score of centuries, we find this "asp"—so called, though with but trifling resemblance to the *naji haji*, or cobra—as the emblem of the royalty and wisdom of Egypt, and as such adored under the title of *Mā-ti* or *Uā-ti*, typical of *Amenti*, or the "Land of the West," to which the souls of the departed were expected to *wing* their way.** The "ark," too, is observed as part of the properties of the early Egyptian and Chaldean *Mysteries*, whence it obtained place in the religious worship of the Hebrews; it was generally in the form of a *caïque*, or boat, and in each case was cherished within the "holy of holies" as a "covenant" or *bond*, the real significance of which was its former use as a means of communication between the lands of the West and those of the East, such as was possible before the destruction of the "Lost Continent."

Regarding the *tree* emblem, we know that grove or tree worship is yet extant in many parts of our globe, and in Yucatan it is still the custom to surround houses of worship with the emblem of the Maya Empire, the *cieba* tree. In this is also found a key to the grove *Mysteries* of the Hellenic Peninsula and Greek Mesopotamia, the Druidical rites of Œsus, the oaks sacred to the royal Baal of the Phœnicians or Assyrians, the ash venerated by the Scandinavians, the tamarind adored in Egypt, the palms of Delos and Ceylon, and the significance of the banyan, or *Ficus Indicus*, in the Deccan; in each instance the tree selected being the most hardy and enduring of the region, and therefore typical of *strength*. Also, we obtain better understanding of the significance of the brazen serpent reared in the wilderness by Moses,†† who, as the putative child of Thonoria and grandson of a Rameses, would obtain early initiation into the *Mysteries*, the influences of which are everywhere manifest throughout his career. Presumably, in Arabia whence he fled soon after discovering his ignoble origin, was obtained further wisdom, for the *Mysteries* of that country were already famed

* THERAPEUTIC GAZETTE, April, 1887, p. 235.

† Valmiki, in the Sanskrit poem "Ramāyana," tells us that colonists from Mayax in very remote ages took possession and settled a portion of the Indo-Chinese peninsula now known as the Deccan.

‡ Sacred *Mysteries* of Mayax, pp. 108, 114, 117, 121.

§ Ibid., pp. 123-125.

|| Ibid., pp. 115-120.

¶ Ibid., p. 118.

** Here we have, perhaps, a clew to the theory of Angels, though in the main these spiritual beings seem to be derived from the *messengers* employed as go-betweens by the mythological deities of old: these messengers were in no sense themselves deities. (See Prof. W. Robertson Smith's "Doctrine of the Angels," *Pop. Science Mo. Supplement*, No. 61, p. 514.)

†† *Mā-shā* (Moses) in the Maya tongue means "From the *First Taken*,"—i.e., drawn out of the water. It bears no evidence of being an original Hebrew word, and the history of the man is opposed to such supposition.

for their teachings in natural science; and here, undoubtedly, for a time he gave himself over to asceticism and meditation with a view of wiping away the "stain of blood" that was upon him, developing *ecstasia* more profound than that taught by the schools of Chemi, whereby were obtained visions like that of the "burning bush" described in Hebrew records.* Returning, he sought to relieve his people from degrading bondage, and with them found a government based upon the highest conceptions of the "*Supreme*" as taught in the sacred colleges, at the same time doing away with the esotericisms of the minor degrees and removing the debasing influence resulting from the teachings of apotheosis. The construction of the tabernacle with its appointments and "holy of holies;" the "ark of the covenant" with its deep signification; the limiting of high advancement to the members of his own tribe (subsequently a privilege that accrued to royal blood), and to individuals physically and mentally perfect (*Levit.* xxi. 17); the typifying the land to be seized upon and occupied, as that of *Can* (Canaan); the attempts to lift his followers to a higher plane morally and intellectually while inculcating implicit obedience,—whence the forty years spent in the "desert"; the laying of tithes or taxes; his individual knowledge of natural laws and of therapeutical, pharmaceutical, chemical, hygienical, and astronomical science; all exhibit the training of Heliopolis and Memphis, and stamp him as not only one of the most advanced of the "*Initiated*," but scientifically and politically one of the greatest men developed by any age or era.† Little wonder his name is revered by existing generations, or that at the court of Pharaoh he won the victory over the Magi who by their very caste and calling were limited in knowledge!

The sciences and arts that had the seal put upon their sepulchre in the murder of the beautiful and gifted Hypatia of Alexandria, daughter of Theon the mathematician, by the rabble following of Bishop Cyril, were already upon the wane in the time of the great "law-

giver;" already the hermit colleges of Arabia ranked higher than the temples of the Nile Valley. The unity of the *Mysteries* had been weakened by secessions and subdivisions that, while lessening their value, opened the way for political trickery and individual ambitions, further fostered by the spread of the pernicious doctrine of apotheosis. The ranks of the *Mystai* received accessions from those who sought the guise of knowledge rather than true learning, and power rather than intellectual development, whereby the miraculous superseded the philosophic. The higher degrees were first neglected, then their divisions broken down by prostitution to the will of a political majority, and a few centuries later they had ceased to exist save in name, or had disappeared in the unknown regions of the farther Orient,—beyond the Caspian and the Persian Gulf,—there to linger and languish for lack of intellectual support and nourishment until the present hour. Brahminism, Buddhism, and Confucianism are the imperfect survivals, the two former retaining the fragments of an obscure psychism, the latter inculcating the subservience of all things to education and intellect. With a spasmodic uplifting and revival, the greater *Degrees* were partially and imperfectly restored to the Chemitic colleges, passed over into Greece and thence to Rome, only to return to Egypt in still further debauched condition, and to again retire to the fastnesses of Arabia, whence fragmentary portions came to us in later years by way of the Levant and Iberian Peninsula. The Greek and Roman Emperors, influenced on the one hand by the Christian Church,—that by the means taken to insure the spread of its doctrines received constant accessions from the ranks of the illiterate and vulgar,—on the other fearing the influence of the learned and wise, persecuted the latter even to death. For centuries knowledge was criminal; the exercise of reason and thought, treason and heresy;‡ and thus the last vestiges of the grandeur of the remaining *Mysteries* were crushed, and their esotericisms, lost to all true meaning, came to be embodied as part of religious creeds the better to satisfy the clamors of a superstitious populace;§ not the least of which in political bearing and import was the anthropomorphosis of *Isis*, or

* *Exodus*, iii. chap. It was long taught, as is yet the case among *Derwishes*, that to pass into a condition of *ecstasy* is a foretaste of absorption in or *union with* the Supreme. No religion is without ecstatic relations; to this hour we see it in orthodox "*revivals*" so called, in "*spirit circles*," and all forms of devoteism.

† *Ibid.*, chap. xxv. to xl.; xxx. 34–37; *Levit.* x. 9–10; *Ibid.*, xi. to xxi.; *Deut.* iv.; *Ibid.*, xiv.; *Exodus* xxii. 20; *et al.*

‡ Draper's "Conflict between Religion and Science," p. 60.

§ "The reign of Constantine marks the epoch of the transformation of Christianity from a religion into a political system," etc. *Ibid.*, p. 52.

Mau (the apotheotized *Moo*), as *Maria* or *Mary*, the *Mother of God*.*

In Mayax, Egypt, Chaldea, India, and all ancient countries with pretensions to civilization, the acquisition of knowledge was made illicit save to those of the *Mysteries*, and thus, directly and indirectly, was fostered the principle of *caste*. Something of the same lingers even yet, and may be observed among primitive nomads, though they have advanced politically sufficient to recognize the value of bribes in removing otherwise insurmountable difficulties.† Garcilasso de la Vega informs us this was the case among the Shyris and Quichuas,—a statement that is corroborated by Bishop Landa as to the tribes of Mexico and Central America. While the *Mysteries*, in the main, were the privilege of birth and class, it was also possible, under conditions, for those of lower castes (females as well as males) to enter certain lesser or modified degrees, whence they might be advanced, if capable, by taking upon themselves the vows of sacerdotalism; but such candidates must needs exhibit special aptitude for the offices prescribed, and were tested in various ways by ordeals,‡ examinations, and appalling rites. Thus the real or active priesthood, more rapidly recruited, in time became the more influential and powerful factor, especially as standing in the gap between education and debased intelligence. Little wonder that the *Mysteries* degenerated and became prostituted to political power, for whoever runs may read that, in all ages and climes, among nations of high civilization as well as those steeped in the dregs of abject barbarism, the priestly class have ever arrogated to them-

selves special privileges because of their supposed familiarity with the Higher Presence,§ and also have jealously guarded their scientific and intellectual treasures from the vulgar by throwing about them the veil of superstition and mystery. In both the higher and lower *Mysteries* all discoveries, real or feigned, and all manifestations of thought and intelligence, were hidden beneath a cover of symbols the secret or esoteric significance of which could be penetrated only by the initiated,|| while the common people were given such exoteric explanations as were conveniently plausible. This principle is yet adhered to by Buddhists, Brahmins, and Adepts; by the Christian Jesuits who profess to be the repositories of all knowledge, theological, philosophical, and therapeutical,—though in many ways inferior to some of their heathen prototypes; and by various secret organizations, including the different branches of Masonry, which itself is, in a sense, a survival of the *Mystikos Sekos*. With all, the secrecy for centuries upheld and still observed, is justly deemed the guarantee of honor, profit, and power.

It has before been remarked that the Sacred College embraced various orders and classes as well as degrees. Some of these led directly to the *Mâc*, or *Ephori*, as the Greeks were wont to denominate the highest perfection, which was the last step before reaching the degree that should entitle the aspirant to privilege of direct communication with the *Supreme*.¶ others were self-limited, having been instituted with special designs or purposes. There were others also not of the *Mysteries*, but *Mystical*; but these were of comparatively modern origin, and in the nature of extraneous religious worship, political and social organizations, or of the class of the *Saturnalia*.**

The first, taught the various branches of art, science, and philosophy, relatively and progressively, as a means of greater esoteric

* The cross from remote ages was an emblem of the *Mysteries*. The ancient astronomers of Mayax observed that at a certain period of the year, just at a time when their country otherwise would suffer from drouth, the rainy season was heralded by the *Southern Cross* appearing perpendicular to the southern horizon. This is our month of May, which owes its name to MAYA "the good dame," the "mother of gods." The cross was everywhere associated with water or rain, and the emblem of the goddess thereof (Maya). This is why the Romish Church celebrates the feast of the *Exaltation of the Holy Cross* on the third day of the fifth month, which it has consecrated to the "Mother of God," "our Good Lady," the virgin *Mâ-R-îâ*, or the goddess *Isis*, anthropomorphosed by Bishop Cyril, of Alexandria. Isis was the sister of Osiris, therefore the Mayax *Moo* (also called Maya), being a dialectical mode of expressing the Maya word *icin* ("the sister"). She is also termed *Mau*, and one of her titles, like *Moo*, was "royal wife and sister." (Appendix K.)

† THERAPEUTIC GAZETTE, April, 1887, p. 235.

‡ Ibid., pp. 235, 236.

§ Ibid., pp. 233, 234.

|| Herein consists the mystery of the Bible and other ancient writings, and that is expressed by scholars under the name of "Orientalisms." The esotericisms of the *Mysteries* indelibly stamped themselves upon the languages of the East, and likewise are found exhibited in the speech of various nomadic races, including the aboriginal inhabitants of America.

¶ *Hâc-mâc* or *Lab-mâc*, "The True," the "Very One," was the title of the high pontiffs of Quiche and Mayax, and the highest degree attainable in the ancient Central American *Mysteries*.

** Compare with the plan of the Church of Rome, from the Pope down to the lowest priest or acolyte!

understanding, and of nearer approach to the Supreme, Mysterious, and Occult—to Deity; in the second the knowledge acquired in the first was given the more practical bent necessary to satisfy the demands of utility.

In Mayax as well as the East, those who attained the "higher perfections" were to greater or less extent invested with supernal attributes in the eyes of their inferiors and of the vulgar, and there is little doubt they were more familiar with the secrets of Nature as manifested by the laws of psychism than any of the present age; perhaps also they may have had a more definite and thorough conception of Deity itself. Abdemonus the Tyrian, grand vizier to Hiram, would seem to have been one of these fortunate individuals, since the traditions of the Orient picture him as a *genie* in human form whose wisdom exceeded that of Solomon.

That the pre-historic as well as historic races of these ancient civilizations were not steeped in degraded bigotry, barbarism, and superstition; that their knowledge was not limited by a low and debased form of intellectuality; is made manifest by their records and by existing monuments. The evidences at command point out they were our superiors in art, architecture, mathematics, astronomy, and, to some extent, mechanics. Scarce anything of the present will endure like the mural paintings of Uxmal and Chichen-Itza, the sculptures of Thebes and Memphis, the rock decorations of Elephantis, or the walls of old Jerusalem; in China from time immemorial the mathematics so difficult to Latin and Anglo-Saxon races are the pastime of infancy and childhood; the pyramids and clepsydras of Yucatan and the Nile, and massive stone sextants, quadrants, and dials of India bear witness of exhaustive astronomical science, and we now know the form of the earth and its relations to the solar system had been defined and measured, and observations regarding eclipses, equinoxes, solstices, conjunctions of planets, and occultation of stars, recorded that but recently were deemed new; and when a French engineer caused to be engraved upon its pedestal the ponderous machinery invented to lift the Luxor obelisk to its place, a similar feat of engineering had been performed for its fellow in St. Petersburg and at the hands of a Trans-Caspian mujik with the simplest of appliances aided only by the traditions of his race! The *Troano* MS. would take high rank as a geological work in any age; the *Popol-Vuh* will compare favorably with any literature of its class, even

the Apocalypse; and the fragmentary records of Assyria and Chaldea engrafted upon the Hebrew yet preserve their freshness and interest. Neither are there valid reasons for imagining the various branches that go to make up the science of medicine were all in the degraded and debased condition described by Hippocrates, whom it is the fashion to style the *Father of Medicine*, but with equal propriety might be termed the *Prince of Munchausens*, for it is now known the writings that bear his name are chiefly factitious, and not the product of any one pen or age. Moreover, the ancient authors who could impart the desired information, by the oaths exacted in the *Mysteries*, were forbidden to perpetuate their knowledge save in esoteric form—in parables.*

The discoveries in Yucatan and Central America are too recent to afford definite or precise knowledge regarding the therapeutics of the ancient races, save in their psychophysical relations. With anatomy the edu-

* It is claimed by the Jews and supported by their traditions, that the founder of Christianity received his education in Egypt, whence he was carried to escape the jealousy of Herod, and there became familiar with the Mysteries and their doctrines. This would seem to have at least the basis of plausibility in that he taught by means of parables and enigmas, which was the language and method of the Colleges, and inculcated in his followers the communism and simplicity that obtained with the *Mystai* among themselves. (The primitive churches were communal, though not to the degree the term implies in our day.) That he was familiar with psychic influences as manifested by the phenomena popularly denominated *animal magnetism*, is apparent from the remark to which utterance was given at the time the woman "with an issue" sought to be healed by touching the "hem of his garment" (*Luke* viii. 46): "*Some one did touch me, for I perceived power had gone forth from me*" (also *Mark* v. 28-34). Again, his last words upon the cross, that have ever been a matter of puzzle and dispute to philologists (*Matt.* xxvii. 46), prove to be *pure Maya* with practically the same significance as given by John (xix. 30), or "*Finished; finished; and darkness is upon me*," or, "*will cover my face*." We know the "Beloved Disciple" was of higher rank educationally than his collaborators, and hence would be more apt to understand the true meaning of the Mystic sentence, "*Eli, Eli; lama sabach thani*," that Matthew and Mark surmise to be an adjuration to *Elohim* (God); or more likely the sentence, "My God, my God, why hast thou forsaken me?" is an unauthorized interpolation, since *Eli* is the Græcized *Eloi* of the Armenian tongue. That foreign words survived in the *Mysteries* and were employed for certain esoteric purposes we have evidence in the *Kon-x Om Pan-x* that wound up the *Autopsia* and that has no meaning in Greek: also *Cansha Om Pansha* employed by the Brahmins to-day in the same sense as the Romish "*Ite missa est*," and to dismiss their assemblages. Both are apparently derived from the Maya vocables *Con-ex Omon Pan-ex*,—"Go forth, strangers; disperse."

cated orders and the priesthood must needs have been somewhat familiar, for embalming, both partial and complete, was practised. In the sculptures that detail the life of Prince Coh, the final picture of the tragedy is the preparation of his body for the funeral pyre; and by a transverse incision in the abdomen, directly beneath the xiphoid cartilage, had been removed the heart and viscera that were to be preserved, and that are exhibited in the hands of his relatives. Embalment, here as in Egypt, presupposes extensive familiarity not only with the internal arrangements of the human economy, but also with aromatics, astringents, and antiseptics, and perhaps acids and chemicals; and a race accustomed to preparing and mixing colors for the purpose of adorning the walls of their palaces and temples, would scarce be so ignorant of the true values of articles of the mineral and vegetable kingdoms as to ascribe to them supernatural and diabolical virtues. Sculptures and pottery relating to the therapeutics of childbirth are quite common. The National Museum of Mexico is rich in these, and they exhibit a minuteness and fidelity of details that evidence extensive familiarity with the parts involved and their physiology; also with various abnormalities and presentations; with *massage* for correcting the position of the infant; with turning; manual expression, and mechanical aids and appliances for the removal of both child and placenta. In one instance the condition of a lady is expressed by a protuberant abdomen upon which is pictured the size and development of the foetus, indicating that at the time of death she was some four months advanced in pregnancy, and the faithful delineation of the uterus and its contents would serve fairly well to illustrate the teachings of this period of gestation in our own day.

In the records of ancient Egypt we have even broader views of medical science. Glimpses are had of pharmacal and chemical knowledge; of shops for the compounding and sale of cosmetics, perfumes, "sweet unguents," and drugs; and we also are treated to pictures of gynecal, obstetrical, and surgical operations, including amputation, resection, and *trephining*. Syncellus informs us of the existence of a *Pharmacopeæ Chemi*, adding that ætites were employed for ascites and to procure abortion, *carbonate of lead* and *sulphate of copper* for soothing and astringent ointments respectively, that a solvent was known for renal and vesical calculi, and the crises and courses of fevers understood; also

we surmise that the *nepenthe* of Homer given by the Theban queen to Helen of Troy to soothe her sorrows was a narcotic draught; and the same poet's description of the *Lolophagi* presupposes too great a familiarity and indulgence in opium or hashish.

There were also lower or subjective orders of priests and *Mystai*, by the Greeks termed *Pastophori*, whose duty it was to minister therapeutically to the needs of the common people and the military, and in return therefor derived an income from the public treasury. These were individuals of comparatively low origin, with mere smattering of education, who employed charms, amulets, and other psychic measures compatible with and attractive to the tastes of their beneficiaries. Moreover, they were obliged to confine themselves, each to a special form or class of diseases, for a stated number of days implicitly following the routine* prescribed by the Sacred College or the chief of their order, ere innovations could be made. Under such circumstances we are not surprised to learn that progress was slow among this class of practitioners, or that officers of rank frequently themselves sought to alleviate the sufferings of those under their command.

But, because the masses were wedded to ignorance and superstition carefully fostered by the dominant classes, we have no precedent for believing the *Initiated* were steeped to the lips in gross fetichism, or that therapeutics, as commonly asserted, were "no more than absurd worships rendered different divinities." Are the masses representatives of the education and refinement of our modern civilization, or are they free from charlatanism, superstition, and miracle-worship? Was the symbol of *Thoth* or *Osiris* worn suspended from the neck more absurd than texts from *Scripture* now advocated and employed by the exponents of "The Divine Art of Christian Healing,"† or the bits of "blessed Eucharist," medals of Virgins or Saints, or—better yet—the "black cat's skin-poultice" ordered by a regular physician at the request of the wife of a United States

* The Mysteries rigidly enforced their rules. We see this in the Hebrew *Law*, and again in a study of the public art of Egypt, where everything was built and chiselled on precise scales, and by the same esoteric rules and lines. In private art, however, we find notable exceptions, and evidences of the discard of canonic and mathematic idealization in the interest of truth: for instance, the fragment in the museum at Boulac that has been dubbed "The Schoolmaster,"—"an undeniable portrait." (Reber's "Art," p. 41.)

† *Century*, July, 1887.

Senator to relieve *globus hystericus*? Does the bulk of the clergy of the nineteenth century represent the advanced thought and education of their calling, or do the multitude of practitioners evince skill in pathology, physiology, or therapeutics? The learned of Egypt did not often exercise their skill save among their own degree and caste; and with such a civilization, even though knowledge was esoteric and privileged, there must needs have been considerable progress in medicine and therapeutics, since both are, in a sense, contemporary with man's reclamation. The pity is that we cannot penetrate the secrets of the past to determine the heights to which they had risen. That medicine was a long way removed from superstition and occultation is evidenced by the fact that seven books devoted to this subject were part of the properties of the temples, six of which, including a treatise upon the *Eye*, were ascribed to Thoth, the preceptor of Isis, the other, an exhaustive work on Anatomy, from the pen of Athothems II.; and these volumes were so complete that no one man within the limits of public usefulness could master them all, for which reason the *Pastophori* were restricted to special walks of professional life.* Again, it is recorded that one of the Ptolemies devoted his leisure to comparative anatomy and physiology, performing dissections under his own hand; and at a later period a school of practical anatomy was founded at Alexandria. Wunderbar, after carefully weighing all the evidences, declares the higher *Mystai* were physicians of "rich cultivation and attainments;" and that this was the impression abroad, appears from the request of Cyrus that an Egyptian *Oculist* be sent to the court of Persia. At this time it also was the custom, in all parts of the world, in all matters of Life and Philosophy, to seek counsel of wise men who were chance visitors from other countries.

Among the early Hindus six books† were

cherished corresponding to those of Thoth in Egypt, and a seventh, *Bajikarana*, of later date, and sometimes deemed spurious or apocryphal to the *Mysteries*. These constitute the *Agur-Veda*, which Sir William Jones, after cursory examination, further hampered by lack of practical familiarity with Sanskrit, pronounced mere empirical histories of diseases and their remedies. But this criticism may or may not be just, since the key to their esotericisms is probably lost; and to-day it is practically impossible, for the same reason, to obtain parallel interpretations of the Hebrew and Greek Scriptures. The *Shastra* teaches each form of life contains within itself certain elements, the relations of which one to another cannot be disturbed with impunity, and whence the ultimate conclusion that all diseases are the manifestations of increase or diminution of such elements, whereby is established the preponderance of one or more to the exclusion of others. Who will definitely criticise such physiology, or decide exactly how far it is right or wrong?

The native therapeutists to-day, especially among the lower *castes*, are represented by mountebanks,—dealers in amulets, charms, and sham esotericisms. It is not at all strange, however, considering the vicissitudes by war, rapine, bloodshed, and famine, that in rapid succession have overtaken the Indo-Chinese peninsula, that the education of the *Mysteries* has practically vanished, the little remaining being a literature that, while it commands our admiration, conveys little of its true meanings; or that the inhabitants have reverted to a primitive and demoniacal system of philosophy, and the Fakir (*Pastophori*), hurried on by the greed that is inherent to all the human family, has fallen to the low estate of the original *Sham*.

In all matters that are not distinct historic records we are accustomed to accept the prejudices of the Greeks and Hebrews, and deny the peoples whose civilizations were a reproach to these two nations the exercise of the commonest intelligence. Neither the Hellenes nor the Jews ever builded so massively or grandly as those of Petra, Assyria, Persia, Arabia, Hyrcania, etc., that—following example—we are wont to term "*Barbarians*." Herodotus is cited as authority that Chaldea and Persia were destitute of therapeutic talent because it was the custom to expose the "ill and afflicted upon the market-places" in the hope some one might take pity thereupon, and because on certain historical occasions physicians were summoned

* Says Surgeon-General Charles A. Gordon of the *Horse Guards*, who has paid considerable attention to anthropological medicine, "The art of healing in Egypt had evidently attained a recognized position prior to 2717 B.C.; and in the '*Papyrus Ebers*' there is evidence that knowledge of the treatment of disease was more advanced than in the time of Galen, or the second century of our era!"

† The "*Salya*" and "*Salakya*" were devoted to traumatic and organic surgery; the "*Kaya-Chiketsa*," to practical medicine and therapeutics; "*Bhutaridaya*," to mental phenomena and diseases; "*Kaumara-Bhritiya*," to diseases of women and children; "*Rosayana*," to chemistry; "*Bajikarana*," to sexuality and the increase of the human race.

from the banks of the Nile or the hills of Attica. But in either case the record is imperfect, and, moreover, it is doubtful if its author ever intended such interpretation should be placed upon it. The exposure of the pauper ill to public gaze on the market and in the vicinity of the caravansaries, for the selfsame reason, is yet a custom of the Orient.* It is in the hope they may attract the attention of some learned and travelled wise man, or *derwish*, who will bestow his services gratuitously; and a foreign *Hadji* is always in greater repute, no matter how apparent his imposture, than the skilled wisdom of local talent. We know there were Hebrews who were *Ephori* in Babylon, the Ecbatanas, Persepolis, and Nineveh; likewise Magi, who were capable of ministering to those of their own caste. Xenophon† declares that Cyrus "got the best physicians about him," and "whatever instruments and medicines were needed," and that he was "grateful" for their services, and "spared no expense" in their education; and it is not at all probable the whole empire, or even its army, was at the mercy of foreign hirelings. Finally, the summoning of experts from abroad, without more specific evidence, is entitled to no more consideration or comment than accrues to the same in the present decade.

The Children of Israel, deriving their civilization from the banks of the Nile, closely followed the teachings and precepts of the Chemitic colleges. The masses of Egypt, crushed by the weight of ignorance and misery, then as now passed their lives in filth and brutality. Moses, from the very outset of his political career, however, sought to lift *all* his countrymen to a higher level of intelligence and morals, and unite by the broad bond of community of purpose and thought. With this view the lesser *Mysteries* were thrown open and their esotericisms made public; woman was lifted to a higher plane socially than was known in Egypt, save among the noble classes; virtue, temperance, thrift, chastity, cleanliness, and obedience were inculcated, along with statutes manifestly derived from close contemplation and study of natural laws and objects, such as were known only to those familiar with the inner courts of Hieropolis and Memphis; and all were made imperative as being specific acts, released from the veil by command of the Su-

preme Intelligence, who thus sought to draw a "favored race" nearer to Him.

It must necessarily be granted that the great "*law-giver*" who had penetrated the secrets of nature as taught by the highest *Mysteries*, and who was deeply versed in the laws of hygiene and prophylaxis,‡ could not have been wholly ignorant of therapeutics, for among the rudest peoples, if at all progressive, remedies selected at random through some supposed esoteric or spiritual influence, by empirical application must lead, ultimately, to increased and specific knowledge. Prejudiced by the precarious and uncertain information afforded by history that at its best is but skeletal, we ignore the deeper and relative meanings of the *Talmud*, *Mishna*, and *Scriptures*. Turn to the former, and in the treatise termed *Chulin* discover a detailed description of the pathological conditions indicative of disease in animals designed as food, including *trichinosis*. In *Leviticus* and *Deuteronomy* note the directions for preserving individual and public health; the selection of portions of creatures for sacrifice, and rejection of those organs of the economy whose functions are the removal of impurities or excretion; the disposal of filth, that it may contaminate neither air nor water; the disposal of the dead; disinfection and purification of clothing and dwellings and the laws of quarantine;—all of which indicate deep physiological and pathological knowledge. Will any one presume to say that the human race—male and female—would not be materially improved both as to health and morals if the Mosaic law was rigidly enforced to-day?

Moses, we read, prepared ointment according to the "apothecaries' art," and apparently he possessed considerable familiarity with chemistry and metallurgy.§ Solomon speaks of the "powders of the merchant,"|| proving that a distinct trade was carried on in pharmaceutical products; and in one instance we find a prescription in due form.¶ Again, Moses, Elisha, Daniel, Balaam, and others give evidence of skill in *ecstasia*, *psychomancy*, *clairvoyance*, etc., and the first three manifestly were adepts in the art of appealing to the nerve-centres through the medium of the senses. Solomon was undoubtedly familiar with zoological and anatomical science, skilled

‡ *Leviticus*, iv. to xxvi. chaps.

§ *Exod.* xxiv. 20; xxx. 35; *Proverbs* xxv. 20; *Jeremiah* ii. 22.

|| *Canticles*, or *Song of Solomon*, iii. 6; also "*The Wisdom of Solomon*."

¶ *Exod.* xxx. 23-25.

* See second paragraph preceding; also THERAPEUTIC GAZETTE, May, 1887, last foot-note on p. 305.

† Institutes of Cyrus, book viii.

in the arts, and conversant with the laws of heredity, besides possessing knowledge of therapy. Josephus mentions his ability to "expel sicknesses."* His reputation for the production of psychophysical phenomena, and as one of the highest of the *Mystai*, is the theme of Eastern story; and from all accounts he should have had some slight knowledge regarding *women*. And we read that King Asa, when his disease was great, "sought not the Lord,"—i.e., the privileges of the higher Mysteries to which his rank entitled him,—“but the physicians,” or Jewish *Pastophori*.

The *Talmud* affords glimpses of a somewhat extensive pharmacopœia, including, as it does, decoctions, draughts, infusions, wines, vinegars, syrups, oxymels, essences, mixtures, liniments, cataplasms, blisters, ointments, electuaries, clysters, plasters, powders; also cathartics, emetics, tonics, sudorifics, expectorants, pyretics, tonics, abortives, soporifics, hæmostatics, astringents, poultices, and depilatories. The following substances receive individual mention in connection therewith: water, wine, beer, vinegar, honey, whey, milk; oils of opobalsamum, myrrh, rose, palm-christi, cotton-seed, walnut, sesamum, colocynth, fish; figs, dates, melons, apples, pomegranates, pistachio-nuts, almonds, pitch (bitumen), also all grains; leeks, onions, garlic, beets, mustard, pepper, coriander-seed, ginger, cummin, beside various herbs steeped in oil and wine; eggs, salt, suet, wax, fish-gall, ox-gall, ashes, cow-dung, pigeon-dung, bats' blood and droppings, and the droppings of sheep and fowls, *album græcum*, urine, “fasting-saliva;” calamus, aloes, myrrh, frankincense, myrtle, endive, mint, anise, fennel, cotton-plant, lily-roots, madder, narcissus, wormwood, jessamine, laurel, clover root and tops, jujube, hyssop, thyme, fern, milk-thistle, broom, juniper, poppy, acacia, pine, lavender, rosemary, saffron, madragordia, cinnamon, canella, cassia, spikenard, styrax, mandrake, *mentha gentilis*, *alhenna*, *sampsuchum*, *curaca maralis*, *ladanum*, *galbanum*, *blatta byzantium*, *ammeisision*, pyrethrum, musk; ætites, mercury, soda, litharge, borax, alum, clay, iron, copper, lead, yellow arsenic, bitumen, and *theriaca*. Certainly no very disreputable showing.

Wunderbar enumerates from the *Mishna* and *Talmud* no less than fifty-six forms of surgical instruments and appliances, exclusive of the obstetric stool referred to in *Exod*.

* Ant. viii. 2.

i. 16, and again in 2 *Kings* xix. 3. But surgery ranked less high than medicine by reason of being deemed a *mechanical* accomplishment, and, as is yet the rule in the East, united with it the profession of barber, and in Egypt, oftentimes, that of embalmer. The statement so frequently made that the ancients imagined the heart increased in size until the fifty-sixth year, and then slowly atrophied until death claimed its victim, must be taken cautiously. It was probably a figurative expression having reference to man's liberality, and not to a supposed anatomical feature, whatever may have been the construction placed upon it by the vulgar. The same is also true regarding a nerve extending from the ring finger to the heart.†

Medicine early declined among the sons of Jacob. It is doubtful if it ever reached higher perfection than at the time of Moses; certainly not after Solomon. From the reign of the “wise king” the decay of the race as a political factor has been steady. The heredity of nomadism has never been wiped out. While individually giving evidence of high intellectuality and capable of reaching any goal, the masses of the Hebrews, especially of the far East, are less civilized than at the time of the Exodus. Jewish physicians, however, among all nations, have ever taken high rank, and to-day it is rare to find one in the midst of civilization who is not an able physiologist, pathologist, and therapist, or who is not well informed in all collateral branches and sciences.

APPENDIX.

K.

Undoubtedly the story of Abel as it appears in *Genesis* was derived from the history of Osiris through Chaldaic sources, alterations having been made to preserve the mysticisms of the sacred colleges; for those acquainted with the truth as obtained through the *twelve* degrees would only give such exoteric explanations thereof as might suit their purpose or convenience. It is for this reason that so little is learned from ancient writings and authors: herein consists the mystery of the *Scriptures*; and this is why Herodotus, confessedly one of the *Initiated*, excuses himself for lack of explicitness; and Plutarch in his “*Osiride et Iside*” only purports to give such explanation as will satisfy certain of the inferior *Mystai*.

† This has been confused with the little finger by some authors, which had a specific office prescribed to it in the pouring out of libations. It was the *ring* finger of the *left* hand that was supposed to be *nearest the heart*, and it was for this reason the *third* finger of the *left* hand was chosen to carry the marriage circlet—a superstition that yet obtains as custom in our own day.

The Hebrew (non-scriptural) tradition is that Abel and Cain each had a twin-sister, and that Adam proposed to give the elder daughter to the younger son, and the younger daughter to the elder son, in marriage. This was every way agreeable to the first-mentioned couple, who had conceived a deep affection one for the other; but unfortunately the elder brother had fallen in love with his twin, she being the more beautiful of the sisters; hence the tragedy.

Osiris, who was the culture hero of Egypt, espoused his royal sister Isis or Mau, and fell a victim to the jealousy of his brother Set, or Typho. A similar tale is found in the Sanskrit "Ramayana," the victim being Bâli, his murderer Sougrivâ; and the recital is so nearly identical with that archived in the sculptures and paintings of Uxmal and Chichen-Itza, and recorded in the second part of the *Troano* MS., that it is more than probable it was imported from Yucatan direct, perhaps by the colonists who, as Valmiki (the author of the "Ramayana") tells us, settled in the Indio-Chinese peninsula (the Deccan) in remote ages, and who naturally would bring with them the language, customs, traditions, civilization, and folk-lore of their native land.

The Mayax history as it appears upon the walls of various cities of Central America, according to Le Plongeon, is substantially as follows: Cân (the *serpent*), the founder or restorer (*Ahdama*) of the ancient empire of Mayax, possessed three sons and three daughters, respectively named Cáy (*fish*), Aâc (*turtle*), Coh (*leopard*), Moo or Mau (*macaw*), and Nicté (*flower*). As was subsequently the case in Egypt, Ethiopia, Mesopotamia, and other countries, the law of the land demanded the youngest son should espouse the eldest daughter in order to insure legitimate and divine descent; so Moo became the wife of Coh, greatly to the satisfaction of both. Aâc, however, was deeply enamoured of Moo, and sought her hand in defiance of law and custom; moreover, he was deeply jealous of Coh, because of the latter's popularity, and fame as a warrior and huntsman.

With the death of Cân Ahdama, Uxmal, the "Land of the Sun," fell to Aâc, and Chichen-Itza, "Land of the Serpent," to Moo, who shared the sovereignty with Coh; Cáy being High Pontiff of Mayax was not eligible to the throne. Immediately Aâc began plotting to seize the whole kingdom; and finally, after an altercation with Coh, satiated his jealousy by three spear-thrusts in the back of the latter. The country was now thrown into all the horrors of civil war, though Aâc, who was more of a diplomat than a warrior, soon made proposals for the hand of Moo. This tableau represents Moo seated in her house in the midst of a garden, at her feet a basket of oranges ("golden apples"), her hand stretched forth indignantly, spurning the gift, and warning away the supplicating messenger; Aâc is seen on a lower plane making obeisance, while overhead his royal totem, a *serpent*, ogles the macaw perched in the tree above Moo.

Here we have the explanation of the "Temptation," the "serpent," the "apple," and the cause of the fratricidal strife. A basket of oranges is to-day the means employed by the Mayas for conveying an offer of marriage; the serpent was the royal insignia of Aâc as a sovereign, though his individual totem was a turtle; and the whole, whether found in *Genesis*, the "Ramayana," in the *papyri* of Egypt, or in the legend of Kronos of Atlantis, is merely the feud of the children of Cân I. that, passing from mouth to mouth, generation to generation, and country to country, has in some instances suffered slight

disfigurement, probably at the hands of those who were not accustomed to hold woman in the same high veneration that pertained to the sex in Mayax. In Yucatan only is found the narrative as part of the history of a nation; here alone have been discovered the portraits of the actors, the ornaments and weapons they wore, their tombs, and the embalmed and cremated remains of their mortality. Who can doubt the identity of Cân and Zoç with the Chaldeo-Hebrew Adam and Eve, or Chemitic Seb and Nut; or of Cain, Abel, Enos, and sisters with Aâc, Coh, Cáy, Moo, and Nicté, and the Egyptian Set, Osiris, Aroeris, Isis or Mau, and Niké; or that *Sougrivâ* is merely a Hindu Aâc, and *Bâli*, Coh! Even the names in each account are synonymous. No one familiar with philology can deny that A-bâl—A-bâl—Bâl-i—Bâl-âm are identical words. A, the contraction of Ah, is the Maya masculine article *the*; Bâl is the radical of Bâl-âm, and Bâl-âm is for the people of Yucatan to-day the *Yumil-Kaax*, "Lord of the Fields," or "Leopard," the title and totem of the unfortunate Coh. In Egypt the leopard's skin was always a part of the ceremonial dress of priests; in Greece and Chaldea it appears as an appendage of the Mysteries; it was worn by Nimrod and Bacchus, two prototypes of the murdered Prince, and invariably hung suspended from the altars and shrines of Osiris; and when the latter appeared as sovereign lord of Amenti, or the "*Land of the West*," his symbol was a leopard reclining beneath an open eye. *A crouching leopard with human head, the ear tablets of which bear the name of Coh, has recently been unearthed among the ruins of Chichen!* Again, the leopard's skin is mentioned by the Brahmins in connection with the prayers of *Ayâtreyâ Brâhmânâ*, and employed in the *âgnishtomâ* of the Soma Mysteries to envelop the neophyte who is to be "*born again*," and "*out of which he emerges as from his mother's womb*." (By comparing with Appendix N further clew may be had to the esotericisms of both the Old and New Testaments.) Osiris or Osir appears to be derived from the Maya verb *Osil*, equivalent to "dearly beloved," a title that often accrued to Coh because of the love borne him by his sisters, and that manifested by the people generally whose hero he was.

Cain, Set, Sougrivâ, and Aâc are all expressive of the individual. The first is derived from Cân, the title of Maya rulers and also of the rulers of Central Asia from Burmah to Thibet to this day (*Khân*). Set is the cognate of the Maya Ze, "to abuse with blows," an appropriate title for one who murdered his two brothers with strokes of a spear, and when the fortune of war placed his sister Moo in his power, first violated her, then kicked her to death, as is the account given by the *Troano* MS., and Aâc's palace in Uxmal represents him with the heads of Coh, Cáy, and Moo at his belt, and their flayed bodies at his feet. Sougrivâ is made up of three Maya primitives, *suc* ("quietly"), *lib* ("to ascend"), and *hâ* ("from water"), the *turtle*, in fact. Set, for his crimes, in Egypt was denominated *Nubti*, an Evil principle, or, according to the Maya language, the "*Adversary*."

L.

From time immemorial the Egyptian priests carefully preserved among the archives of the temples and sacred colleges faithful accounts of all events deemed worthy of a place in history. They derided the Greek philosophers for their belief in the universality of the deluge of Deucalion, averring there had been several local

catastrophes of like nature. When Solon sought the wisdom of the temples of Delta, he was told that the greatest cataclysm ever known resulted in the destruction of a continent lying off the Pillars of Hercules (Gibraltar), in the Western Ocean, as the sequel "to violent earthquakes and deluges (tidal waves), which brought desolation in a day and a night," when "the land was plunged beneath the sea and entirely disappeared." They placed this event at nine thousand years before the date of narration, or somewhere about ten thousand years before our era. Not only does the same account appear in the *Troano*, but it is also carved in intaglio over the interior door-way of the rooms of the sacred college at Chichen, and specified as *Akâb-ib*, or the "terrible writing." It is not improbable that it was the fate of Atlantis that gave rise to the Chaldean, Chinese, Aryan, Greek, and Polynesian traditions of a deluge, and the narrations of the Sibylline and Phœnician oracles. Rev. Dr. McClintock justly remarks that the curious coincidence between the traditions of the two hemispheres is "explicable only on the hypothesis of some common centre." (See "Biblical, Ecclesiastical, and Theological Cyclopædia," vol. ii. p. 732, *et seq.*) That the peoples of the East had found the means of communicating with the present continents of America long before the time of Columbus or the Norse adventurers is evident from the fact that "*black people*" existed at and about the Isthmus of Panama at the time of the first arrival of the Spaniards; and portraits of such have been discovered in Uxmal, Ake, Chichen, Tula, and Teotihuacan.

M.

A sole and omnipotent Deity, the Creator of All Things, appears to have been the universal belief of the earliest ages. This the Chemitic priests termed *Kneph*, placing superior to the Triads. In Chaldea, "daughter of *Posidon*, king of 'Lands beyond the Sea,'" in spite of the apparent polytheistic character of religion, a Supreme was recognized as *Râ*, "the eternal truth" (*Lâ* of the Mayas), to which also a trinity was subjective. The "*Niroukta*," one of the sacred books of the Hindus, declared there were "three gods" that, however, "designate but one deity,—*Maha-atma*,—Soul of Souls." Tao-Tse, a contemporary of Confucius, wrote, "Reason produced *One*; one produced *Two*; and both produced *Three*." Again, among ancient Peruvians, *Pacha-câmâc* was designated as the head of a trinity composed of Himself, *Con*, and *Uiracochâ*; and the Quiches declared all things existed by reason of *Tzâkol*, whose names are *Bitol*, *Alom*, and *Qaholm*,—the "Constructor," the "Engenderer," and the "Giver of Life."

These conceptions concerning a triune Deity, preserved in the works of the early philosophers, have descended to the present, but we nowhere learn their precise origin. If the ancient priests knew, they carefully concealed the fact; and the "Fathers" of the Church manifestly were equally in the dark, being satisfied with appropriating as an unfathomable mystery, and imposing as a dogma. (See Draper's "*Conflict of Religion and Science*," p. 53.) Indeed, so little was the subject understood that for a time it was a wrangle who should be named as the least and last of the triad, the Virgin Mary having a numerous and influential support. ("Bib. Theolog. and Eccles. Cyclopædia.")

The conception of the Creation that obtained among

the ancient people of Mayax is well told in a tableau sculptured on the east façade of the palace at Chichen. It represents a luminous egg, emitting rays and floating in the midst of the waters where it had been deposited by the Supreme Intelligence. In the egg is seated the Creator, his body painted blue, in his hand a sceptre, a plume of feathers surmounting his head, and his loins wound with a broad falling girdle; he is surrounded by a serpent, symbol of the Universe. Porphyrus's account of the Orphic *Mysteries* would serve as an explanation to this. To the initiated, Jupiter is represented "as a man seated, alluding to his immutable essence; the *upper part of the body naked*, because it is in the skies the Universe is most uncovered; *clothed from the waist below*, because terrestrial things are most hidden; *with a sceptre in his left hand*, because the heart is on that side and the organ that regulates the life of man." Says M. Le Plongeon, "The philosophers of Mayax probably knew the waters covered three-fifths of the globe, and that water being a combination of gases, the most subtle of fluids, must have been the first form of matter produced. This is why, on each side and on the top of the tableau, they placed the symbol of water, taking care to leave without it, at the upper part, a portion equal to *two-fifths* of its length. In the midst of the waters they represented the figure of an egg, because their study of physiology had made them acquainted with the fact no being exists on Earth that is not born from an egg. The egg emits rays of light into which, says Thoth, 'all things resolve themselves,' and that, says the *Popol Vuh*, 'appeared on the water as an increasing brightness that bathed the Creator.' Notice also that the symbols of water terminate with the head of serpents, because they compared the waves of the ocean to the undulations of the reptile's body while in motion. For this reason the Mayas named the sea *Cânâh* the great, the powerful serpent; and in the *Troano* the sea is always designated as a serpent's head. This explains why the Mayas, Quiches, Egyptians, Hindus, etc., represented the world, and by extension the maker of it, as a serpent. Thus it is that they placed a serpent within the egg, behind the Creator, to indicate this symbol is the totem of the ancestor of all beings. And here we have one of the origins of serpent worship,—that is, adoration of the Creator." The Egyptians called the creative power *Kneph*, from *Kâneh*, a cognate of Can-hel (serpent), and said he threw from his mouth an egg in which was another god, *Phthâ*. *Phthâ*, or *Thâh*, in Maya signifies the "worker," hence maker or creator.

Either the Maya, Quiche, or Egyptian account might be accepted as a translation from the "Manava Dharma Sastra," a book compiled from other and more ancient works of the Brahmins, somewhere about 1300 B.C. (H. T. Colebrook). This work further declares, "In the beginning was nothing but darkness. Then the great self-existing Power dispelled the darkness and appeared in all his splendor. He first produced the waters, and on them moved *Narayana* the divine spirit." Compare this with *Genesis* i. 1-4. Then with the Chaldean account, "In the beginning all was darkness and water; and therein was generated. . . . animals and . . . forms. Thalath ruleth them all." (The Chaldee *Thâlâth* (woman), Greek *Thalassa* (sea), is the Maya *Thâllâc*, "thing without steadiness.") The Hermitic version is, "There was boundless darkness, and water and a subtle spirit, intellectual in power, existing in chaos. But the holy light broke forth, and the elements were produced from a watery essence." The

Chemitic record declares, "All things had resolved themselves into light . . . the earth nowhere appeared" (Primander). And the Quiche, "Everything was without life, calm and silent; . . . void was over the immensity of the heavens . . . only the tranquil sea was, and the space of the heavens. All was mobility and silence and darkness; only the Creator, the Maker, the Dominator—the Serpent—they who engender, they who create, were on the waters as an ever-increasing light."

Whatever may be the view taken of the subject, it can hardly be argued that this identity of ideas is purely accidental.

N.

The following extracts are adapted from "Sacred Mysteries of the Mayas and Quiches":

BOOK OF ENOCH: "A spacious habitation built with stones of crystal. The roof had the appearance of agitating stars, and flashes of lightning. Flames burned about its walls, its portals blazed with fire. The dwelling was hot as fire,—cold as ice. . . . Then I went to another habitation, more spacious than the former. Every entrance which was opened before me was erected in the midst of a vibrating flame. . . . Its floor was on fire; above were lightnings and agitating stars, whilst its roof exhibited a blazing fire. . . . One of great glory sat upon the orb of the brilliant sun. . . . A fire of great extent continued to rise before him. (Chap. xiv. ver. 12, 14, 18, 24.) . . . They raised me up into a certain place where there was the appearance of burning fire; and when they pleased, they assumed the likeness of men. . . . And I beheld the receptacles of light and thunder at the extremities of the place. There was a bow of fire, and arrows in their quivers . . . a sword of fire, and every species of lightning. (Chap. xvii. ver. 1-3.) . . . Then I passed into another terrific place . . . where I beheld the operation of a great fire, blazing and glistening in the midst of which there was a division . . . columns of fire struggled together to the end of the abyss, and deep was their descent. . . . This was the place of suffering. (Chap. xxi. ver. 4, 5, 6.) From thence I proceeded to another spot, where I saw on the West a great and lofty mountain; a strong rock, and four delightful places." (Chap. xxii.)

Again, Henoch gives us an elaborate account of how, with the help of his son Mathusaleth he constructed a dwelling deep in the bowels of a mountain in the land of Canaan, in imitation of the nine vaults shown him by Deity, each apartment being roofed with an arch, the apex forming a keystone, upon which were engraved mirific characters, each of the nine letters representing one of the nine words emblematic of the nine attributes of God. He then constructed two triangles of pure gold, tracing on each two of the mysterious characters; one of these was suspended within the deepest arch, the other given to Mathusaleth, to whom he imparted "*important secrets*." Note that all this is in consonance with the esoteric rules and teachings of the Mysteries, and that the structure corresponds to the plan and architecture of the temples of Yucatan and the Nile.

The initiation at *Xibalbá*, in the heart of the mountains of Guatemala, consisted of seven ordeals, according to the *Popol Vuh*: 1. Crossing the rivers of *mud*, followed by that of *blood*; journeying the *white, red, green, and black* roads, and the salutation of the twelve veiled *Mystai*; the detection of the false or dummy *Mystikos* in their midst; the scorching that accrued to those who ventured to recline in the presence of the

august assemblage when so invited, the seat being a hot stone. 2. The "Dark House," where for the space of a night a lighted torch must be maintained, yet returned whole at the termination of the ordeal; terrible chastisement, even death, in each instance awaited those who failed. 3. The "House of Spears," where for twelve hours the candidate was obliged to defend himself from the attacks of an expert spearman; and also to provide four pots of rare flowers without outside communication, or bringing with him. 4. The "House of Ice," where the cold was intense, yet had to be borne from darkness until daylight. 5. The "House of Tigers." 6. The "Fire House," a burning furnace, the heat of which must be borne from sunset to sunrise. 7. The "House of Bats," full of death-dealing weapons, and the dwelling of *Camazotz*, the Cheiropteran god, who appeared and beheaded the candidates if off their guard.

"Do not the terrors of Xibalbá recall the visions of *Henoch*?"—remarks Doctor Le Plongeon,—"The blazing house of crystal, burning hot and icy cold—that place where were the bow of fire, the quiver of arrows, the sword of fire—that other where he had to cross the babbling stream, and the river of fire—and those extremities of the earth full of all kinds of huge beasts and birds—or the habitation where appeared one of great glory sitting upon the orb of the sun—and lastly, does not the tamarind-tree in the midst of the earth that he was told was the Tree of Knowledge, find its simile in the calabash-tree in the middle of the road, where those of Xibalbá placed the head of Hunhun Appu after sacrificing him for having failed to support the first trial of the initiation? Even the title—*Häch-mâc*—of the high priest in Mayax, that we see over the bust of High Pontiff Prince *Cây Cànchi*, son of King *Cân* at Uxmal, recalls that of the chief of the Magi at Babylon. Do not also the awful ordeals of Xibalbá seem an exact counterpart of what happened in milder form at the initiation of Eleusis or the greater Mysteries of Egypt from which they were copied? Does not the recital . . . recall to mind the wonderful similar feats said to be performed by the *Mahâ-âttmas* in India, and of several of the passages of the book of Daniel, who had been initiated to the mysteries of the Chaldean Magi? Will it be said that the Mysteries were imported from Egypt, Chaldea, India, or Phœnicia to America? Then I will ask when? By whom? What facts can be adduced to sustain such assertion? Why should the words (*Con-ex Omon Pân-ex*) with which the priest at the conclusion of the ceremonies of Eleusis, and the Brahmins at the end of their religious ceremonies, dismiss the attendants, be *Mâya* instead of Greek or Sanskrit?"

PORT HURON, MICHIGAN.

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For each pill.

To be taken morning and night, and continued until sugar has disappeared from the urine.

The Therapeutic Gazette

EDITED BY
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AND
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PHILADELPHIA.

DETROIT, MICH., August 15, 1887.

GEO. S. DAVIS, Medical Publisher, Box 470.

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Leading Articles.

THE DANGERS OF ANTIPYRIN.

IT has almost seemed as if history was repeating itself in the case of antipyrin. Like all other drugs enthusiastically received by the profession, and in many cases truly unworthy of the recommendation that they have received, antipyrin is only now, several years after its introduction, commencing to show its disadvantageous side in a stronger light. Scarcely a journal comes before us which does not contain some mention of the unfavorable results which have followed the use of antipyrin. In addition to the fatal case referred to in the GAZETTE for 1885, p. 257, we have recently seen a record of at least one death produced by its use, although the authority for that statement has escaped our memory, innumerable cases where untoward results have been produced, and several cases where cyanosis, vomiting, disturbed respiration and circulation have followed doses which, in other circumstances, have been administered with impunity. Guttman, to whom especially we are indebted for a great deal of valuable information as to the action and indications for the use of this

drug, in the *Therapeutische Monatshefte*, June, 1887, calls attention to two striking cases, in which, in his own experience, alarming results followed the use of antipyrin. Numerous cases are on record where collapse has followed the use of antipyrin in doses of 45 or 30 grains,—the doses recommended by Filenhe, its discoverer,—but in one of these cases of Guttman's, in a few minutes after the administration of a dose of 15 grains, cyanosis of the face, increased respiration and pulse-frequency, dyspnoea, and sensations of extreme heat over the entire body, made their appearance. In a few hours these symptoms had disappeared under the internal use of camphor, and applications of mustard over the breast and calves of the legs and an ice-bladder over the heart. In another case similar appearances came on after the same dose, with the addition of oedema of the arms and hands,—symptoms which, in spite of treatment, continued for three days.

Without attempting to give the statistics of similar cases, which we do not doubt have come before the attention of all readers of medical journals,—and perhaps the experience of most practising physicians is not free from such unfavorable results,—it does not follow that antipyrin is necessarily in danger of losing its prominent position. As is well known, most of our powerful remedies are found, in certain individuals, productive of the most serious results after the administration of the smallest doses. Such idiosyncrasies are frequently met with, and our desire is only to attract attention to the fact that antipyrin cannot be administered to every one in the usual doses with impunity. These idiosyncrasies can only be guarded against by the most extreme care in the commencement of the use of any drug. We would therefore recommend that wherever antipyrin is used for the first time the dose should never exceed 10 grains (and perhaps even $7\frac{1}{2}$ would be better) until it has been found that no serious action follows its use. In fact, it is very doubtful to our mind whether the dose should ever exceed 10 grains, since common experience seems to show that the reduction of temperature is not in direct proportion to the size of the dose, but that, in fact, after large doses sometimes the temperature may rise instead of falling.

In this connection it may be mentioned that at a recent meeting of the New York Pathological Society, Dr. Porter (*New York*

Med. Journ., July 30, 1887) presented the liver and kidneys of a patient to whom large doses of antipyrin had been given, in which, as a result of the action of that drug, it was thought, extensive fatty and granular metamorphosis had taken place. The patient had had only a moderate attack of rheumatism with some elevation of temperature, for the reduction of which pretty full doses of antipyrin were given at rather short intervals. It did not seem to affect the temperature very much. After the patient entered the hospital the temperature went up to 105° F., and following the use of antipyrin it went up to 107° F. The use of antipyrin was then stopped, and salicylic acid was administered. The temperature then fell to 103° F. Antipyrin was given again, and the temperature rose again. Antifebrin also was used, but the temperature went higher and higher, and the patient died with a temperature of 109° or 110° F. The speaker had seen in literature that men who had experimented with antipyretics, such as antipyrin, antifebrin, and thallin, had found extensive changes in the liver and kidneys, and during life casts and albumen in the urine, but they maintained that it was of no practical importance. They also had made the observation that patients treated with these antipyretics recovered less quickly, especially patients with typhoid fever, the duration of the disease being about forty-two days, whereas in those treated with other antipyretic measures, such as baths, it lasted only about thirty-two days. One writer had said that when he used antipyrin he succeeded in getting the highest death-rate, but he was inclined to think the patients were more comfortable while they lived. The speaker had noticed for some time that in the bodies of patients who had been treated with antipyrin there was very frequently granular and fatty metamorphosis of the liver and kidneys. He had, therefore, come to believe that antifebrin, antipyrin, and thallin were not such safe antipyretics as had been maintained.

BETOL—A NEW ANTIRHEUMATIC REMEDY.

THE substitutes for salicylic acid and its salts, which are continually increasing in number, appear to have received an important addition in the introduction of a salicylic ether of naphthol, which has been recommended by Sahli, who our readers will remember likewise introduced salol into the therapeutics of rheumatic affections (*Therapeutische Monats-*

hefte, June, 1887). To this substance Sahli gives the name of betol, and like salol, which divides into salicylic acid and phenol, it splits up in the organism into salicylic acid and naphthol.

Betol appears to possess the advantage over salol in freedom from odor and taste. It contains, however, ten per cent. less salicylic acid than salol, and has likewise the disadvantage of possessing a much higher melting-point (95° instead of 43° C.), a point which is of importance, since the readiness with which such compound ethers split up into their component parts is dependent upon the lowness of their melting-point.

The conditions under which this remedy may be applied do not yet seem to be clearly established, since Sahli states that while he has in numerous cases of articular rheumatism, neuralgia, etc., employed betol with most successful results, in other cases its use has been followed by no improvement. In the latter instances, examination of the urine has shown, by the absence or faintness of the salicylic acid reaction, that the preparation did not become decomposed, as it must do to produce any therapeutic effects. Betol is readily soluble in fluid fats, and Sahli recommends the administration of this substance in solution in oils, with the hope of facilitating its decomposition, since it is known that the melting-point, and therefore the point of decomposition, is lowered by the presence of certain organic bodies.

Kobert, in the preceding number of the same journal, has likewise published a paper on this subject, in which he, almost without qualification, gives the preference to betol over salol, especially in its freedom from disagreeable after-effects. Sahli regards this position as, however, not yet proved. He has given betol in amounts varying from 2 to 12 grammes (15 to 180 grains) in the twenty-four hours, the latter in a six-year-old child. In some instances he has found the most marked effects from the smaller dose, while in other cases the larger amounts have appeared entirely inert. He therefore thinks that in our present imperfect knowledge regarding this substance, betol cannot yet take the precedence over salol on account of its smaller percentage of salicylic acid and its more difficult decomposition; so, also, the substitution of the inactive naphthol for phenol is to be regarded as a disadvantage, since the action of salol is not to be attributed solely to the salicylic acid but also to the phenol, which especially appears to be of value in the treat-

ment of neuralgia. Nevertheless, on account of the freedom from disagreeable odor and taste, betol appears to be well worth further study to establish the conditions in which it is of value and to determine the correct method of its administration.

Kobert, who describes this preparation under the name of naphthalol, found it very useful, and at least as valuable as other medicaments, in various forms of catarrh of the bladder, especially in gonorrhœal cystitis, with alkaline decomposition of the urine. The urine soon became clear and acid, the formed elements in it were diminished in number, and the pains of the patients became easy.

A NEW LOCAL ANÆSTHETIC.

NO physician nowadays can claim to eminence in the medical profession unless he has discovered a local anæsthetic. There is no doubt in our mind that this fact is universally recognized. Witness the innumerable claims to the dignity of a new anæsthetic continually before us. The last candidate for these honors appears to be a joint discovery by a veterinary physician, Mr. Goodman, Dr. A. M. Seward, of Bergen Point, N. J., and Dr. J. Herbert Claiborne, Jr., of New York. Mr. Goodman was first on the scent by noticing the apparent anæsthetic properties of a poultice made from a pile of leaves raked haphazard from the ground. Dr. Seward, according to Mr. Claiborne, discovered an alkaloid in some leaves submitted to him by Mr. Goodman, and he terms the alkaloid, of which the process of extraction is not given, stenocarpine. It appears, however, that the botanical name of the tree from which this substance is derived is unknown. According to Mr. Goodman, the source of the leaves employed by him is known in Louisiana, the locality where this substance was first employed, as the tear-blanket-tree.

It grows to the height of thirty-five to forty feet, with a diameter to the bole of about eighteen inches and a spread of foliage of about thirty to thirty-five feet. The leaves resemble those of an acacia. The bark is smooth. From the ground up the tree is furnished with clumps of forked spines or thorns, the parent spine springing at right angles from the bough or trunk. Though Mr. Goodman is a native of the region, he has never seen the tree blossom. As fruit it bears pods eight or ten inches in length, flat

and slightly curved, containing seeds and a viscid juice.

The spines are very tough and highly polished, and the wood is extremely tough. It grows in clumps and singly, and is abundant in Louisiana.

From the likeness of the tree to the *Acacia stenocarpa* Dr. Seward dubbed the new alkaloid stenocarpine. It would have been better, however, to withhold the naming of the alkaloid until the botanical name of the tree had been known.

Dr. Claiborne's share consisted in clinical experiments with the substance supplied him by Dr. Seward. According to Dr. Claiborne (*Medical Record*, July 30, 1887), two drops of an aqueous solution produced in a few minutes complete insensibility of the cornea and conjunctiva, with dilatation of the pupils, the anæsthesia lasting for about half an hour, the dilatation of the pupils for thirty-six hours. This substance would even appear to be more efficacious than cocaine as an anæsthetic, for Dr. Claiborne reports instances in which the application of a few drops of a two per cent. solution on the skin produced almost absolute anæsthesia, so as to permit the painless removal of tumors, warts, etc. In the nose also applications produce complete anæsthesia, and in the case of the ear, the instillation of a few drops permitted the touching of the drum-membrane without pain.

As to whether we are to have another disappointment in this case or not the future alone can tell.

SOLANIN.

AS the readers of the GAZETTE may remember, though discovered in 1821 in potato shoots and in the parings of young potatoes, solanin has been only recently introduced into medicine by Dr. Geneuil, who employed it in subcutaneous injections in sciatica and other forms of neuralgia. Continued experience has, however, proved that so employed solanin injections are extremely irritating, and Geneuil therefore came to the conclusion that solanin possesses caustic action, and he recommended it to be employed only hypodermically in cases where a tolerably severe revulsive was desired.

The subject has again been investigated by M. Adrian, who presented his results to a recent meeting of the Société de Médecine Pratique (*Les Nouveaux Remèdes*, June, 1887). He has found solanin is not an alkaloid but a glucoside, and if solanin is dissolved in an acid,

the entire amount of acid may be recovered in its free state, while the solanin splits up into glucose, and a new base, still imperfectly known, which he terms solanidiné. It follows from this that it is incorrect to speak of solanin salts, and injections made of acid solutions of solanin owe their escharotic properties to the free acid. Nevertheless, it appears that solanin possesses decided analgesic properties.

In the thesis recently published by M. Gairnard, he there states as the result of the experiments which he has carried out under Professor Dujardin-Beaumetz, and with Dr. Bardet, that solanin, obtained from the germs of the potato, is possessed of incontestable anæsthetic properties, and is almost free from toxic effects, as much as 15 grains of solanin being required to kill a small rabbit. It is, of course, possible that solanin obtained from different species of Solanaceæ may contain atropine or other allied alkaloid, which will, perhaps, explain the character of the results produced by it. The subject is well worthy further study.

*QUILLAJA ACID—A CONTRIBUTION TO
OUR KNOWLEDGE OF THE
SAPONIN GROUP.*

KOBERT, of Dorpat, Russia, contributes an elaborate article under the above title to the *Archiv für Experimentelle Pathologie und Pharmakologie*, 23 Band, 3 u. 4 Heft, of which the following is a concise abstract:

In 1782 Molina described a Chilian tree whose bark gave to water a biting taste, and which he called *Quillaja saponaria*. It is generally counted among the Rosaceæ, although Brown has pointed out marks of difference. The bark of the tree was soon known as "washwood," or "panamarinde." Sections made through the bark show masses of crystals of calcium oxalate and a network of fibrous tissue. The active principle is contained in formless masses of dark-colored substance, contained in the cells of the parenchyma of the bark. Concentrated sulphuric acid turns this substance first yellow, then bright red, and finally a violet-blue. Early analyses of the plant, after the method of Schroder and others, seemed to demonstrate the identity of saponin with the so-called Egyptian soap-root, the quillajarinde of Henry and Boutron-Charlard, and also the common senega-root, together with other common plants with which we had long been familiar. The importation and use of the Egyptian plant were lessened by the cultivation of the native sources of saponin.

Kobert's analyses of various sources of saponin, from different sources, convinced him that the saponin of various authors is not a simple body, but a combination of at least two substances not easily separated. He found that the separation of saponin by precipitating it with barium was wholly worthless, as the efficiency of the drug was thus more or less impaired. He was led to conclude, however, that the process of obtaining the active principle by its combination with acetyl gave a substance whose poisonous adjuvants were thus destroyed; it was more reliable than the barium process. Pure saponin he found to be a tasteless substance, of un-irritating odor, and free from poisonous properties; the symptoms of poisoning following the use of the drug were caused by its mixture with other substances. By a method whose most important steps were concentration of a solution from the boiled bark, precipitation by acetate of lead, the removal of coloring-matter by chloroform, and finally drying the precipitate from a clear solution over sulphuric acid in a vacuum, Kobert obtained a powder, of acid reaction, which he called quillaja acid. With its alkaline salts it is in water, carbonates, and caustics readily soluble. By treating it with alcohol and chloroform crystals may sometimes be obtained, but this happened too infrequently to admit of analysis of the crystals. Only the free acid is soluble in alcohol; this solution will take five times its bulk of chloroform before precipitating the solid. A test between pure saponin and sapotoxin and common commercial saponin lies in the fact that the latter are very little soluble in absolute alcohol. In methyl alcohol quillaja acid is easily soluble; in ether insoluble; in chloroform sparingly soluble by warming. This acid and its alkaline salts hold insoluble powders so well in suspension that their filtration is difficult. It may be best combined in emulsions, as the French have found. Copper sulphate, ferric and mercuric chlorides, ferro- and ferricyanides of potassium, and other allied salts do not precipitate it. Solutions are readily decomposed by bacteria, and germs grow readily in them. Concentrated sulphuric acid colors quillaja acid a beautiful dark red. Further experiments show it to be a glucoside, turning polarized light towards the right; it is found to be a glucoside acid, resembling ergotin acid. Pepsin, pancreatin, ptyalin, and diastase do not decompose it. It was found that quillaja acid and saponin differ in that the latter is an impractical modification of the

former. The formula $C_{19}H_{30}O_{10}$ corresponds to the results of analyses, and it is composed of about one-third of sapogenin and two-thirds glucoside; its acidity is exceeded thirty-five and one-third times by sulphuric acid. Although many have written regarding this substance, yet few have used it therapeutically, and it has as yet no therapeutic literature proper.

A case of poisoning from the drug has been reported by Lessellier. The symptoms were rigors; epigastric cramp; cold sweats; tremors; syncope, which soon disappeared; a small pulse; skin moist; excessive vomiting; anxiety and distress referred to the præcardium; vesical tenesmus, and increased secretion of urine. These symptoms disappeared under expectant treatment in three days. The sodium salts of quillaja acid have a strongly acrid taste. A five per cent. solution applied to the throat promotes salivary flow, and produces great irritation; profuse nasal and lachrymal secretion are caused when the same solution is applied to the nasal passages. In the larynx convulsive cough is produced. A minute particle of the substance, or a drop of two or five per cent. solution, brought in contact with the conjunctiva, produces burning, intense pain, followed by œdema and pus-formation. The pupil is contracted, from irritation; the cornea does not generally become involved, and in five hours after the application the swelling has disappeared. Strong solutions, when painted on the external skin, are inert, but application by ointment with friction produces erythema, with itching and burning, and, if the application be continued, a pustular eruption. The tissues of the frog, when brought in contact with the substance in solution, lose their vitality much more rapidly than commonly. Blood-corpuscles are dissolved or disintegrated by the substance in solution; it is a poison to protoplasm, and injures the vitality of the tissues when brought into direct contact in solutions of even one-half per cent. For injection into the blood a solution of one-tenth per cent. was taken. In fatal cases it was often impossible to find post-mortem changes; death resulted evidently from cerebral paralysis, and paralysis of the respiratory centre. Post-mortem changes were most generally found in the upper and lower portions of the small intestine, and consisted of excessive hyperæmia, profuse secretion, and thickening of the mucosa. Extravasation of blood did not occur, but the capillaries were enormously distended. The toxic effects often

went much further than this, and extensive degeneration of the glandular structures of the intestine resulted. A noteworthy phenomenon was the formation of hyaline material about the villi, and the decomposition of the blood. The large intestine showed similar effects in less degree. Endocarditis, especially about the valves, was often present. There was œdema of the hepatic duct and gall-bladder. The urinary bladder and pelvis of the kidney were occasionally the seat of the same changes as the intestine. The urine was full of blood and cystic debris. Hæmoglobinuria and albuminuria were often present. Quillaja acid itself was not found in the urine. Changes in the kidney-structure itself were rarely found, although there was good reason to expect them. The liver was generally slightly enlarged, but not greatly affected. The mesenteric glands were also swollen. The muscles of the general muscular system, and also the heart-muscle, were not affected. As has been stated, the heart-valves were roughened, and at their bases there was swelling and œdema. At the early stages of the poisonous effect no diminution in blood-pressure was observed, but in the later stage of coma a complete vaso-motor paralysis was observed. When the fatal dose was so small that no intestinal lesions were observed, nothing else pathological could be observed, and the fatal result was ascribed to paralysis of the cerebral ganglia by an agent which by repeated circulation in the ganglion-cells successively paralyzed them. In the slowness of its action the drug resembled the heavier metals which are poisonous. The largest fatal dose given was $\frac{1}{1000}$ part of the weight of the animal experimented upon; the smallest dose was $\frac{1}{100000}$ of the body weight; and when the dose was reduced to $\frac{1}{100000}$ part of the animal's weight, recovery was the result. After the injection of large doses of the poison into the blood it could not be certainly identified in the urine. It has been shown that quillaja, when compounded with sodium, in solution of $\frac{1}{10000}$, dissolves blood-corpuscles. Hæmoglobinuria was not observed frequently, irregularly only, and it was found that the liver was somewhat distended by decomposed blood-corpuscles after the poison had been injected into the blood. In cases where no changes were observed in the intestines it was found that the number of red corpuscles was diminished, and the intestinal changes were thought to be due more to decomposition of the blood than to any change originating in the intestine. Although this

drug was so poisonous when injected into the blood, when given by the mouth it was much less active. A rabbit took $\frac{1}{1000}$ part of its body weight of the drug without any symptoms of poisoning; another took $\frac{1}{1800}$ part of its body weight with no worse result than diarrhoea for two days. The intestinal symptoms following death from the drug, when given by the mouth, were wanting, a notable difference from its effect when injected into the blood. Kobert reckons that five hundred times as great a dose can be taken by the mouth without injury as can be given by injection into the blood; this depends upon the very slow rate of absorption of the poison by the intestine. It is not decomposed by the ferments of the pancreas, stomach, and saliva, for it was found in the fæces. The subcutaneous injection of the drug was practised upon frogs, on whom between $\frac{1}{2}$ and $\frac{1}{3}$ of a grain produced fatal effects. A notable effect of poisonous doses subcutaneously was ideomuscular contractions, which persisted in the skeletal muscles for twenty-four hours after life had apparently ceased; rigor mortis subsequently ensued. In warm-blooded animals injections subcutaneously caused great pain, with local hemorrhagic inflammations, with a tendency to abscess-formation and œdema. The injected fluid could be found after several days in the fluid of œdematous tissues. Fatal effects followed such injections very tardily, showing the slow absorption of the poison. Intestinal changes were not often observed. Several hemorrhages were seen beneath the pleura in one case. The dose was in one case of poisoning by subcutaneous use $\frac{1}{1000}$ of the body weight. In cases where the poisonous symptoms were slow in development, minute hemorrhages were found in the subserosa of the intestines.

In distinction from quillaja acid saponin was found almost non-toxic, having but feebly the effects of the acid, although decomposing to some extent blood-corpuscles. It was thought to be at least thirty per cent. weaker than quillaja acid.

Reports on Therapeutic Progress.

INTUBATION OF THE LARYNX.

Intubation of the larynx was recently made the subject of debate before the New York Academy of Medicine, and we lay before our readers a full abstract of the papers read, as published in the *Boston Medical and Surgical Journal* for July 28, 1887.

DR. F. HUBER read a paper based on a study of forty-seven cases, the results of which had convinced him, he said, that at the present time tracheotomy should only be resorted to in cases in which intubation had failed to afford the needed relief; and he was of the opinion that a case of this kind would seldom be met with. Having stated that the dyspnœa was as effectively relieved by intubation as by tracheotomy, he spoke of the advantages of the former, and also referred to the origin of the procedure as proposed and practised by Bouchut in 1858. Then, after referring to some practical points derived from his personal experience, he said that intubation had now passed through the experimental stage, and that its utility had been fully established by numerous operators in different parts of the country. Notwithstanding the gratifying results obtained, however, it had as yet received very little favor, or even attention, in Europe.

Of his forty-seven cases, Dr. Huber said that twenty-nine, with eleven recoveries, were in children under three years of age, and eighteen cases, with nine recoveries, in children of three years or over. Of the children under three years, one was nine and one-half months; one, ten and one-half months; two, eleven months; one, one year; two, two years; two, two and one-half years; and two, two years and eight months old. Of all the children that he had been called upon to treat, who were suffering from laryngeal stenosis, he had found it necessary to resort to intubation in only one out of every three or four cases, and he thought that it should not be practised until dangerous symptoms had supervened. He used it, in fact, in exactly the same class of cases in which one year ago he would have performed tracheotomy. Having spoken of the diagnosis of croup and the indications for surgical interference, he referred to the importance of making a careful examination of the neck and chest, and said that he had known cases of retro-pharyngeal abscess and empyema to be mistaken for laryngeal stenosis. As confirmatory of the diagnosis of the latter, relative absence of fever, in uncomplicated cases, was of much value; and aphonia, with difficulty of both inspiration and expiration, was positively indicative of croup.

He next spoke of the various accidents and mishaps which had been met with in connection with intubation, and the objections raised against the procedure. He referred first to the gag, and said that O'Dwyer's gag was

liable to be displaced by the struggles of the patient, but that this was not the case with the one devised by Dr. Denhart, which he exhibited. The thread attached to the tube should be eighteen or twenty inches in length, and, if not withdrawn at once, should be passed over the ear and secured. In order to avoid accidents in introducing the tube the efforts to place it in position should be short and repeated, rather than kept up uninterruptedly for any length of time. One of the most serious accidents that could occur was the pushing of dislodged membranes before the tube, and in a case of this kind Dr. E. D. Ferguson, of Troy, was obliged to resort to tracheotomy.

Several deaths had been reported from this accident, and Dr. Waxham had recently devised a long tracheal forceps for the purpose of removing the membranes when it occurred. In a case of his own in which it happened he gave the child brandy, with the effect of exciting a fit of coughing which expelled both the tube and the membranes. If, at any time after the tube had been introduced, noisy breathing should set in, it was an indication for the temporary removal of the tube. The tube had been known to be coughed up and then swallowed. Instances had also been reported in which the tube had slipped through the larynx into the trachea; but this was when the earlier pattern of tube, with small head, was employed. The tube did not act as a foreign body when in the larynx, giving rise to choking sensations and coughing; but if it remained in position for a considerable length of time it might possibly produce slight ulceration. This, however, did no harm.

As to the time for removing the tube, in some cases this might be done as early as the fourth or fifth day, although it was often desirable to allow it to remain longer. As a rule, however, it could be dispensed with at a much earlier date than the tracheotomy tube. If the respiration continued free, the tube should generally be allowed to remain until the fifth or sixth day; but if the respiration became noisy it should be promptly removed, and afterwards reintroduced, if this should prove necessary. When there were diphtheritic patches discernible in the nose or pharynx it was advisable, as a rule, to leave the tube in position until they had disappeared.

In intubation, as in tracheotomy, the prognosis was more favorable when there was simply local obstruction in the larynx than in cases where there was marked constitutional infection from the diphtheritic poison. No age offered a contraindication to intubation.

No positive prognosis should ever be made, however, until forty-eight hours had elapsed from the time of insertion of the tube.

As regards medicinal treatment, Dr. Huber said that it was his practice to keep up the use of bichloride of mercury throughout the course of the disease, whether intubation were resorted to or not. He employed it, in accordance with the views of Dr. Jacobi, in larger doses than those usually recommended, giving from $\frac{1}{2}$ to $\frac{1}{4}$ a grain, and in severe cases as much as 1 grain, in divided doses, during the twenty-four hours. When there was much difficulty in swallowing, he gave it in the form of tablet triturates, of $\frac{1}{16}$ of a grain each, mixed with sugar and placed dry upon the tongue. If there were extensive diphtheritic membranes in the fauces he also employed tincture of iron and chlorate of potassium. In threatened heart-failure he resorted to brandy, caffeine, etc. If the temperature was very high, antipyretics were employed either by the mouth or rectum. Finally, he used the steam atomizer for producing a moist vapor.

Intubation, he went on to say, possessed every advantage possessed by tracheotomy. It could also save many cases in which tracheotomy would not be permitted, as well as many which would die if the latter were performed, especially in children under three years of age. Out of twelve cases in which Dr. Huber had resorted to tracheotomy, ten had proved fatal. He had also seen many cases in the hands of others in which the results were no more favorable, so that he felt warranted in assigning to intubation a much higher position.

DR. J. O'DWYER read a paper on "Feeding after Intubation of the Larynx," in connection with which he exhibited various tubes modified to overcome difficulty in feeding. He also showed specimens with the tube in position, and a section of the cricoid cartilage filled up with membranes, except where the tube had left an opening, the form of which was just the shape of the latter.

The difficulty of swallowing, he said, was recognized by all as the most important objection to intubation, and he had long been trying various modifications in the shape of the tube in order to diminish this as far as possible. At first he tried making the heads of the tubes quite small; but, while this rendered it possible for them to slip down into the trachea, it did not make deglutition any easier. The next modification that he made was to increase the size of the head to some extent, and also give the tube a greater curve, in

order to avoid ulceration at the base of the epiglottis. The third modification was to make the posterior surface of the tube longer than the anterior surface, so as to allow the epiglottis to pass over it more completely. Next, he increased the size of the head still further, so that it should fill the cavity of the larynx, and prevent fluid and other foreign substances from entering around it. The fifth modification was to make the upper surface of the tube concave, so that it would adapt itself more perfectly to the conformation of the parts, and this modification had the effect of rendering it very easy to remove the tube. With the pattern commonly used, extraction had always proved the most difficult part of the procedure.

The last modification which he had adopted was to give to the upper portion of the tube a double backward curve, in the hope of increasing the facility of swallowing, and this, at all events, had the effect of preventing ulceration of the anterior wall of the trachea, which hitherto had sometimes been quite extensive. Any one, however, who practised intubation at all largely would find it advisable to employ a variety of tubes according to the circumstances of particular cases; and he had lately devised a large, short tube for temporary use in certain instances. The string could be left attached to it, and he thought it probable, on account of the large calibre of the tube, that membranes might sometimes be coughed up through it.

Notwithstanding all his modifications, Dr. O'Dwyer said that he still found about the same difficulty in swallowing present. Solids and semi-solids, as a rule, were taken much better than liquids. Food would not enter the tube if the epiglottis was normal. In a number of instances he had removed the tube in order to give nourishment; but the results were no better than when it was in position. In some cases, particularly when nephritis was present, there was nausea and vomiting, as well as anorexia. Sometimes, however, swallowing was more readily accomplished than before the insertion of the tube, on account of the relief which it afforded to the urgent dyspnoea. As a rule, the longer the tube remained in position, the easier it became to swallow. When the patient was old enough to understand, he always gave instructions that drinking should be done rapidly, and that as large a quantity of fluid as possible should be taken at one time. Then, by coughing, the tube could be freed from any of it that might perchance have entered.

Sometimes he employed rectal alimentation, but he very seldom had to resort to the stomach-tube.

Passing on to speak of pneumonia, Dr. O'Dwyer said that in his opinion this might arise from (1) the presence of secretions in the lower air-passages; (2) an excess of blood drawn out of the lungs; (3) atelectasis (in the same cases in which there was an extension of the membranes); (4) the presence of a tube either in the larynx or the trachea. He did not believe that food was a cause of pneumonia, as there was no evidence that food had ever been found in the minute bronchi. He had known a patient (an adult female) to wear a tube in the larynx for over ten months, who not only did not have pneumonia, but who in the mean while recovered from bronchitis, which she had at the time the tube was put in.

He had lately had constructed two hard rubber tubes designed for all kinds of acute laryngeal stenosis in adults; the smaller one for women and young males, and the larger for full-sized males. The principal difference between these and the metallic tubes was in regard to their weight and the size of the calibre. While a rubber tube weighed only one hundred grains, an adult metallic tube weighed an ounce and three-quarters, and the rubber tube was fully double the calibre of the metallic. As regards the comparative comfort of the two kinds of tubes, one patient found the metallic tube the most satisfactory, while another, who was a syphilitic and had a very sensitive larynx, preferred the rubber. In the latter case the metallic tube produced ulceration, which was not the case with the rubber one, while greater freedom of movement and facility of expectoration were also secured with the latter.

DR. DILLON BROWN read a paper on "Statistical Records of Intubation." As far as he had been able to ascertain, there had been reported altogether seven hundred and sixty cases of intubation, by fifty-four different operators; and of these he had tabulated five hundred and two cases. Two hundred and eleven, or 27.07 per cent., had recovered. The average age of the children who died was three years and two months, and of those who recovered, four years and one month. In those who recovered, intubation was resorted to at an average period of two days and nine hours after symptoms of laryngeal stenosis had first appeared, and in those who died, at an average period of one day and nineteen hours. In the fatal cases the average time

between intubation and death was two days and eight hours; and in those which recovered the average time during which the tube was worn was five days and three and one-half hours. The causes of death he found were given in three hundred and thirty-nine of the fatal cases. Those who had performed intubation in the largest number of cases were O'Dwyer, seventy-eight cases; Waxham, one hundred and six cases; Dillon Brown, eighty-four cases; and Huber, forty-seven cases.

Unavoidable accidents, Dr. Brown went on to say, were rare, and, with the exception of the one of pushing the membranes before the tube, were not important. From the use of too much force false passages had been made in two instances. The slipping of the tube down into the trachea, which had been reported in several cases, could never occur if a tube of proper size was employed. In two cases the tube had passed into the œsophagus, instead of the larynx; but there was no reason why this mistake should be made if sufficient care were taken. In order to avoid as far as possible the danger of pushing membranes before the tube, he advised that the latter should be pressed well down, and held firmly in position with the finger until the obturator had been removed. Coughing up of the tube was a source of danger, but this could, as a rule, be avoided if a tube with a sufficient retaining swell was used. If there were paralysis of the muscles, however, this accident was liable to occur, notwithstanding an ample retaining swell. As to the causes of death after intubation, the extension of the membranes to the bronchi was the most frequent, and he believed that pneumonia, when present, was secondary in character.

DR. W. P. NORTHRUP read a paper on the "Pathological Anatomy of the Respiratory Tract after Death from Laryngeal Diphtheria and Intubation." In a paper on this subject, which he read before the Academy in December last, Dr. Northrup said that he had reported eighty-seven fatal cases. Since that time twenty additional fatal cases had occurred at the Foundling Asylum, so that he had now altogether one hundred and seven cases on record. The cause for this large number during so short a period as four months was the occurrence of diphtheria in connection with a fatal epidemic of measles and scarlet fever. The severity of the outbreak was shown by the fact that all the fatal cases had pneumonia, and thirteen of them nephritis. In his former paper he had stated that he had never met with ulcers of the

trachea; but in the twenty cases now reported for the first time there were deep ulcers, laying bare the rings of the trachea, in no less than five instances, and he presented the specimens from these cases. He had not as yet met with ulceration of any consequence caused by the head of the tube,—nothing more, in fact, than necrosis of the epithelium. He had never seen any evidence of aspiration pneumonia, as it was called, due to the entrance of milk or other fluid into the finer bronchi.

DR. IRVIN H. HANCE read the report of a "Case of Laryngotomy after Intubation." It was met with at the Nursery and Child's Hospital, and the patient, who was twenty months old, and suffering from scarlet fever and diphtheria, twice coughed up the tube. After it had been introduced a third time the tube became obstructed, and had to be removed. At this time the child was so exhausted that artificial respiration had to be resorted to for a while. The tube was then inserted for the fourth time, and again it filled up with mucus, and had to be withdrawn. After being introduced a fifth time it again became occluded, and was finally coughed up. The stenosis still continuing, laryngotomy was performed, at the crico thyroid membrane, and complete relief from the dyspnœa was at once afforded. The child died the next day, however, of the scarlatinous disease.

In this case, he said, the tubes were thoroughly tried, and were found to be utterly valueless. Their failure, he thought, was probably due either to the large quantity of tenacious mucus present or to the dislodgement of diphtheritic membrane. It was a question whether tracheotomy should not have been resorted to earlier, before the child had become so exhausted by the existing condition and the repeated introduction of the tube.

In conclusion, Dr. Hance alluded to other cases in which laryngotomy or tracheotomy had to be performed after a trial of intubation. Nine such cases, including his own, had been reported, and among these there had been three deaths and five recoveries, while in one instance the child was still under treatment at the time the report was made. The operation had been performed or advised under the following circumstances: 1. Great irritability of the larynx. 2. When membranes are pushed down before the tube. 3. When the tube became plugged up with dislodged membrane. 4. When there was a return of the dyspnœa with absence of the

tube from the larynx. 5. When the tube became wedged in the larynx.

As to laryngeal spasm, he had found that this could usually be controlled with belladonna, nitre, and chloral. Practically, the only condition calling for tracheotomy was the obstruction of the tube by membranes, and this was a very rare occurrence. The attempt had been made to remove the membranes with forceps. Finally, he said that he would advise resorting to tracheotomy only after intubation had failed.

In reply to a question of the President, Dr. A. Jacobi, Dr. O'Dwyer stated that in his later cases he had performed tracheotomy after intubation in only one instance. His own experience had been so unfavorable in this operation that he was not disposed to hope for much from it. As to removing membranes with the forceps, the subglottic division of the tube was of such narrow calibre that it was practically impossible to use this instrument, and he had, therefore, devised a flexible apparatus for this purpose somewhat on the principle of the umbrella probang. He knew of no wedging in the larynx that could occur except such as was sometimes met with when a tube with a very small head was used. Like Dr. Northrup, he had never seen any evidence of the so-called aspiration pneumonia arising from the entrance of food into the bronchi. The secretions, he believed, were the source of the pneumonia that was found after intubation, there being aspiration of these into the finer bronchial tubes. It was due primarily, however, to the presence of the tube, because the latter impaired the patient's power of expulsion, the secretions under these circumstances not being gotten rid of with the same facility as through the normal larynx.

The President said that he was much pleased to hear both Drs. O'Dwyer and Northrup say that they had never seen any reason to believe that pneumonia originated from the presence of food. He would like to inquire of Dr. Northrup whether lobar pneumonia was of frequent occurrence, and if so, whether this was found especially in cases of sepsis.

Dr. Northrup replied that in the eighty-seven cases previously reported by him, twenty-seven were believed to have died from extension of the diphtheritic membrane. In a large proportion of these there were found membranes extending from the tip of the nose to the finest bronchi of the lungs. Bronchial diphtheria, with œdema, was a marked feature at

the autopsies. Pneumonia, when it did occur, was of late origination. It affected both lungs, and was lobular, not lobar, in character. In not more than one-fourth of the cases could it be said to have been the cause of death.

Dr. Caille said that it was too early as yet to speak a final word as to the merits of intubation. Many of the cases published had been reported in such a way as to render them of no practical value. In comparing this procedure with tracheotomy in his own experience, he found that he had performed tracheotomy in twenty-one cases, with five recoveries, and intubation in sixteen cases, with six recoveries. In his cases of intubation, diphtheritic membranes were observed on the nares or pharynx in nine instances. Most of the cases were seen in consultation, and, as a rule, intubation was undertaken rather late. He believed that all the patients would have died without surgical interference, and that one who died would have recovered if intubation could have been practised earlier. The cause of death after intubation he had found to be catarrhal pneumonia in a majority of his fatal cases. It was a fact that most of the children who died had taken liquids, and of late he had allowed only solids, cut up fine with rice to allay thirst. Since he had adopted this course his results had been better.

In conclusion, he said that intubation was to be preferred to tracheotomy in the majority of instances. When the pharynx and nares are affected, intubation is preferable, as a rule, to tracheotomy, especially when the after-treatment of the latter cannot be carried out satisfactorily. Tracheotomy is preferable to intubation in some cases, hopeless without operation, provided the surgeon can operate and carry out the after-treatment under the most favorable conditions. These statements apply to intubation with the present style of tubes.

The subject may be concluded by the following summary of the present status of intubation published by Dr. E. Fletcher Ingalls in a recent number of the *New York Medical Journal*:

1. Intubation may be quickly and easily performed, and with but little danger.
2. Friends readily consent to the procedure.
3. There is no necessity of tedious after-treatment, as the tube is kept clear by the respiratory efforts.
4. The results so far are practically as good as those of tracheotomy at all ages, and apparently better in very young children.

5. To secure the best results, great care must be taken to prevent the entrance of foreign substances into the trachea.

6. At present, with O'Dwyer's tubes, the most successful plan is to absolutely prohibit the deglutition of fluids while the tube remains in the larynx. Small bits of ice may be sucked to allay thirst; soft solids may be swallowed, and fluids may, if necessary, be supplied by enemata, or the tube may be removed to feed the patient, and then be re-introduced.

7. Tubes with smaller heads, designed to rest on the vocal cords, have not yet been used sufficiently often to enable us to speak positively about them. If experience proves that they do not often slip into the trachea, and that they do not injure the vocal cords, they will be especially useful, for they will nearly overcome the difficulty in deglutition, and patients wearing them may eat and drink at pleasure, excepting when paralysis or some other result of the disease prevents closure of the epiglottis.

8. Medical treatment should be carefully attended to after intubation, and we must spare no effort to prevent extension of the disease to the bronchial tubes, or to relieve the dyspnoea which it occasions. Dr. Ingals apprehends that successful after-treatment depends largely upon the judicious and timely use of suitable expectorants and respiratory and cardiac stimulants.

9. Though short tubes may be used with good results in some cases, the danger of their becoming filled with pseudo-membrane is so great as to render long tubes preferable.

10. Intubation may and should be practised early, and it does not preclude subsequent tracheotomy.

11. For serious cases of spasmodic croup, and for œdema of the glottis, this will prove a most useful procedure.

12. For the treatment of chronic laryngeal stenosis this method will, doubtless, be of value.

NEURALGIA OF THE FIFTH NERVE.

At a recent meeting of the Odontological Society of Great Britain, PROF. VICTOR HORSLEY, F.R.S., read a paper on the "Pathology of Invertebrate Neuralgia of the Fifth Nerve" (*British Medical Journal*, July 23, 1887). He first gave a short history of three cases of this distressing malady which he had treated with apparent success by avulsion of the nerve. Two of the patients were shown at the meet-

ing. All of them had come under his observation at a very late stage of the affection, the shortest period being three years and a half after the onset of the mischief, and in one case as much as seven years after. All were practically edentulous when they came to him, and from all of them after the operation he had heard the same story, namely, gratification at being relieved from pain, and regret at the loss of so many sound and useful teeth. Were there, then, no indications by which it was possible to diagnosticate pain which was due to mischief somewhere along the trunk of the nerve from that which was due to disease of the teeth? If that could be done with any degree of certainty, it would mark a very important advance in dealing with these painful and often troublesome cases, and it was with the hope of obtaining some help from the members of the Odontological Society in deciding this question that he had brought the subject before the society. Pain referred to one of the branches of the fifth nerve might be due to mischief of cerebral origin, to irritation somewhere along the trunk of the nerve, or at its peripheral extremity. It was scarcely necessary to dwell on the possibility of the pain being due to intra-cranial mischief, since the general rules applicable to this class of cases would generally suffice for the discovery of the seat of the trouble. The diagnosis between some affections of the trunk of the nerve and of its peripheral termination was not so easy; but, judging from his own experience, he thought there were points which might assist in forming a decision. Trophic changes, when present, were a very valuable indication of mischief in the trunk of the nerve. Thus, in one of his cases, the lower lip was greatly swollen, the skin being glazed and excessively sensitive, or the vessels might be at one time dilated, and at another just the opposite. Wasting of the muscles was another evidence of the same kind. Certain abnormal conditions of sensation were also valuable. In an ordinary case of toothache all the branches of the fifth nerve might seem to be affected; but in cases where the disease was in the trunk of the nerve, the skin might be hyperæsthetic at one place and anæsthetic at another. Another characteristic form of hyperæsthesia was that in which gently touching the skin caused extreme pain, whilst firm pressure caused no pain at all. As to the apparent origin of the pain, he found that in most cases the patient said it began in the teeth, but in some cases it was said to begin in the bone or in the skin. If the pain was

primarily referred to the teeth, it might be due to them or it might not; but if it began in the bone or skin, and only affected the teeth subsequently, he thought it might be inferred that the disease was in the trunk of the nerve. If, in addition to severe pain over the area of distribution of the nerve, distinctly tender spots were met with along the course of its branches, this was generally an indication that the whole nerve was in a state of irritation, but a somewhat similar condition might sometimes be met with as the result of peripheral irritation. If the pain was brought on most commonly by movement, this seemed to indicate affection of the nerve-trunk. All his patients stated that opening the jaw to eat or to talk brought on pain, and, so far as he was aware, the effect of movement in causing pain was not so marked in cases where this was due to peripheral irritation. With regard to the treatment of these cases, of course any sources of dental irritation should be removed, and in some this would effect a cure. He had found that drugs invariably failed sooner or later. He thought that experience had made it clear that nerve-stretching, though a satisfactory operation as regards some nerves, should not be performed on the fifth; although it gave relief for a time, the pain invariably recurred. Avulsion, on the other hand, performed as close to the aperture of exit from the skull as possible, generally cured, the success of the operation seeming to depend greatly on success in obtaining primary union; nor was the removal of the nerve followed by any trophic changes in the parts supplied by it. A discussion followed.

THE MECHANISM OF THE THIRD STAGE OF LABOR.

At a recent meeting of the Obstetrical Society of London, DR. FRANCIS H. CHAMPNEYS dealt with Part 4 of this subject under the heading "Some Causes of Retention of the Membranes" (*The Lancet*, July 16, 1887). Having referred to the description of the process given in a former paper, the author showed that the "plane of least resistance" for separation of the membranes is in the decidua, generally in the ampullary layer. Any change which renders this more tough, or which renders any other layer more friable, will alter this "plane of least resistance." Thus, undue friability of the chorion, or less firm adhesion between chorion and amnion than between the layers of the decidua, will determine a separation of the chorion and

amnion. The early separation of the lower pole of the ovum tends to guard against a common defect,—viz., failure of separation (retention) of the membranes round the os internum. Rupture of the membranes at the proper time is an essential part of the proper mechanism. The proper time is, in nature, when the os is about three to three and a half inches in diameter, and has a projection of three-quarters to one inch. Premature rupture will prejudice the separation of the lower pole of the ovum. Too late rupture tends to produce prolapse of the bag, which is usually accompanied by giving way of the chorion and advance of the amnion alone. Undue or relatively undue toughness and elasticity of the amnion are equivalent to a tardy escape of the waters. As regards the removal of the membranes by traction of the descending placenta, the author remarked that the membranes as a whole owe their tenacity principally to the amnion; the adhesion of the amnion to the chorion is no doubt one of the safeguards against retention of the chorion. Thus any disorder of the first process of the mechanism tending to separate the two ovuline membranes predisposes to retention of the chorion. An analysis of ninety cases bearing on the matter was given. The conclusions were: 1. That the mechanism of the detachment and expulsion of the membranes is a complex act in three stages. 2. Timely rupture of the bag of membranes is an essential part of the proper mechanism, and too early or too late rupture alike predispose to retention of the chorion. 3. Disorder of any of the three stages in the mechanism tends to prejudice the whole process. 4. Among allied conditions may be mentioned too early or too late rupture of the membranes, prolapse of the bag of membranes, prolapse of the membranes (amnion) after delivery beyond the vulva; separation of the membranes found on examination of the placenta; retention of a ring of membranes round the lower pole of the uterus; retention of the whole chorion. The practical conclusions were: 1. The membranes should generally be preserved till the os is fully dilated. 2. After this they are not only (in ordinary cases) useless, but they—that is, the persistence of the amnion—favor the retention of the membranes. 3. They should, therefore, be ruptured when the os is fully dilated. 4. In vertex cases, if the head has settled over the os uteri, the advance of a smooth, sausage-shaped protrusion of membrane points to advance of the amnion alone, which favors retention of the chorion.

5. Separation of two membranes not only points to adhesion of the chorion, but renders its subsequent removal more difficult. 6. This axiom may be formulated : "When the membranes advance low in a vertex case, look out for retention of the chorion."

LITHIUM CARBONATE AND SODIUM ARSENATE IN CARBONIC ACID WATER IN THE TREATMENT OF DIABETES MELLITUS.

At a recent meeting of the Therapeutical Society of Paris, Dr. Martineau made a brief communication, in which he stated that for several years he had treated cases of diabetes mellitus with a solution of lithium carbonate and sodium arseniate in ordinary carbonic acid water, to the exclusion of every other medicinal remedy, and with a moderately strict antidiabetic diet. Dr. Martineau claimed that he had cured sixty-seven out of seventy cases of arthritic diabetes by this method of treatment, which he had borrowed from a practitioner now dead, the late Prof. Rouget, of Paris. The communication was discussed by Dr. Dujardin-Beaumetz and others, who regarded the method as so simple and, to say the least, innocuous that it was worthy of trial.

The preparation recommended by Dr. Martineau was the following. Into an apparatus such as is commonly used in Paris for extemporaneously making carbonic acid water, are put twenty centigrammes of lithium carbonate and a tablespoonful of a solution of twenty centigrammes of sodium arseniate in five hundred grammes of distilled water. The quantity of carbonic acid water used is about one litre. This quantity is to be drunk by the patient during each day, either by itself or mixed with ordinary wine at meals.

The simplicity of this remedy led Dr. AUSTIN FLINT to test its efficacy in certain cases of obstinate diabetes which he had under treatment, and he published his results in the *Medical News* for July 9, 1887. The ten cases reported led Dr. Flint to the following conclusions :

1. In the three severe cases in which the solution of lithium carbonate and sodium arseniate in carbonic acid water were used, no very marked effects were observed in the few weeks during which the remedy was employed ; but the treatment seems to be worthy of more extended trial, and it may be useful in mitigating the severity of a strict antidiabetic diet.

2. The so-called specifics for diabetes have little if any effect. An exception, however, may be made in favor of the arsenite of bromine, which has sometimes seemed to control, to a slight extent, the thirst, polyuria, and discharge of sugar.

3. The main reliance in treatment is to be placed upon an antidiabetic diet. This has fallen somewhat into disrepute because it is seldom efficiently carried out. In no single instance, out of ninety-nine recorded cases, did Dr. Flint find that the antidiabetic diet had been enforced.

4. Milk should be absolutely interdicted. Its influence over the progress of the disease is prompt, powerful, and most injurious.

5. There are certain cases in which dietetic treatment promptly arrests the disease and keeps it under control. There are other cases in which treatment seems to be of little avail, except in possibly retarding the progress towards a fatal result. Of the ten cases reported, and now under observation, seven are amenable to treatment and three are obstinate.

6. A confirmed diabetic may be cured, in the sense that all symptoms will disappear ; but the disease is liable to return at any time under an unrestricted diet. Still, moderate care in diet will often secure immunity.

7. A patient who has once had diabetes should have his urine examined every few weeks. The glycosuria always precedes the general symptoms of the disease, and these general symptoms can generally be forestalled by proper treatment employed as soon as sugar makes its appearance in the urine.

8. As the disease returns, either from imprudences in diet or from other causes, the successive recurrences present greater and greater difficulties in the way of treatment.

CANNABIS INDICA IN DIARRHŒA.

In a preceding issue we referred to the recommendation by Dr. Rennie in the *Indian Medical Gazette* of the employment of cannabis indica in the treatment of dysentery. In the *Practitioner* for July, 1887, Dr. FREDERICK F. BOND and Mr. B. E. EDWARDS call attention to the value of this treatment in summer diarrhœa. Attention was first turned to this use of cannabis indica by Dr. Turner in 1866, who employed the following prescription :

R Tincturæ cannabis indicæ, ℥x;
Spiritus chloroformi, ℥x;
Tincturæ kino, ℥i;
Aquæ menthæ piperitæ, ad ℥i.

The authors state that they have been in the habit of prescribing the above formula combined with small doses of morphine with marked benefit in nearly all forms of diarrhœa, the effects being most striking in the summer diarrhœa, in which affection the great depression, the frequent watery stools, the vomiting and cramp-like pains are quickly relieved, the appetite speedily returns, and cure is usually effected by the second or third day. They recommend the following combination :

R Tr. cannabis indicæ, ℥x;
Liq. morph., ℥v vel ℥x;
Spts. ammon. aromat., ℥xx;
Spts. chloroformi, ℥xx;
Aquæ, ad ℥i.

To be repeated every one, two, or three hours according to circumstances. Directions.—*No food for several hours, but a little brandy and water.*

It appears to act by increasing the astringent and anodyne properties of the morphine (the dose of morphine would have very little effect alone), by its stimulant effect on the nervous system, improving the tone, and by improving the appetite, enabling the system to quickly overcome the marked depression and exhaustion. Most remedies in this disease rather retard the return of the digestive functions, but from our experience Indian hemp markedly accelerates it. Indian hemp seems also to frequently counteract the bilious action of morphine, as well as the loss of appetite, and allows it to be given where it otherwise would not be tolerated.

In other forms of gastro-intestinal disturbance it is also valuable, probably for the same reasons. It was of marked use in a case of subacute gastro-enteritis, which had existed for a few weeks before it came under the author's care, in a girl aged 13 years, showing the following symptoms: marked anæmia, which had gradually come on after the other symptoms; constant pain over the abdomen, especially in the epigastric region, increased on pressure and after food; tongue covered with yellowish-white fur; loss of appetite; vomiting at variable times after food of partly digested material; diarrhœa, six or eight stools in the day, which were watery and green, containing partly digested food-material; some rise in temperature,—a little over 100° F. She was first treated with bis-

muth, then with effervescing mixtures, with no benefit; then with the cannabis mixture (modified to suit her age), and the symptoms very quickly subsided, the vomiting and diarrhœa were checked, the pain ceased, and the appetite returned. By the end of the week all the symptoms had disappeared except the anæmia, which persisted for a short time longer.

THE CREASOTE TREATMENT OF PULMONARY TUBERCULOSIS.

SOMMERBRODT, of Breslau, is quoted by the *Medicinische Chirurgische Rundschau* for June, 1887, as reporting five thousand cases of pulmonary tuberculosis treated by creasote. His studies have extended over nine years in time, and the patients so treated were all ambulatory cases. By the use of Bouchard and Gimbert's formulæ he treated a number of patients, twenty-seven per cent. of whom recovered. The formulæ most used were 13.5 parts creasote to 1 quart alcohol or Malaga wine; also 2 parts of creasote to 150 of ol. morrhue. Of both of these preparations from 3 to 6 minims of creasote were taken daily. He also used the following :

Creasote, 3.5 parts;
Alcohol,
Aquæ, aa 125 parts.

Of which a teaspoonful was taken twice daily in a glass of water by thirty patients. Following the method of Reuss, the best results were given by the following: Gelatin-capsules, containing each $\frac{3}{4}$ minim of creasote and 3 minims of balsam of tolu. The first day of treatment the patient took one of these capsules, on the second day two, and then for eight days three were taken, after meals, with water. In the second week four capsules daily were taken, in the third five capsules daily, and in the fourth week six capsules daily, always after the principal meals of the day. The remedy, when so given, was generally well borne; they were rarely taken except at meals; their use was continued frequently for a year, and was combined with treatment in favorable climates. The best results were obtained in young patients, in the first stages of the disease, with ill-defined symptoms. In scrofulous gland-affections the results obtained were also good. The irritation and frequent cough present were generally relieved, so that narcotics could be discontinued; bronchial secretion and night-sweats lessened. Sommerbrodt believes that many

such cases can be greatly improved. The remedy must be used for three months or a year, and the more that can be taken the better the results.

MELON-ROOT AS AN EMETIC.

Heberger in describing (*Repertoire de Pharmacie*) the bitter principle of the Cucurbitaceæ attributed emetic and purgative properties to melon-root. Torosicvitz (*Bolletino Farmaceutico*) has found that the emetic principle is a bitter substance extractable by alcohol from the aqueous extract of melon-root, which he designates melon emetine. It occurs in compact brownish masses, breaking with a shining fracture. It is very deliquescent. The aqueous solution has a piquant, bitter taste. It does not react with alkalis or acids, and colors ether. It quickly dissolves in alcohol, but is readily precipitated therefrom by lead acetate or infusion of galls. Liquor ammonia and liquor potassæ dissolve it readily, and from the resulting solution a brownish-gray precipitate is thrown down on addition of acid, which is rather insoluble in water. Recent experiments show that 9 centigrammes of melon emetine produce vomiting. Dr. Langewicz states that the wild plants contain more melon emetine than the cultivated.—*Western Druggist*, July, 1887.

TREATMENT OF PHTHISIS WITH INHALATIONS OF HYDROFLUORIC ACID.

SEIDER, of Paris, has applied this treatment by impregnating the air of the room of phthisical patients with spray, driven by a rubber balloon, and obtained from a solution of 3 parts water to 1 part hydrofluoric acid. The inhalations were made daily for twenty to thirty days in succession. They were at once followed by a relief of the oppression and dyspnoea; the cough was a little more frequent, the night-sweats lessened, and sleep returned. The expectoration was lessened, appetite and body weight increased; an improvement was plainly discernible.—*Medicinishe Chirurgische Rundschau*, June, 1887.

GYMNEMIC ACID.

Gymnemic acid is an organic acid, discovered by Hooper and described before the Nilgire Natural History Society (*Nature*), present to the extent of about six per cent. in the leaves of *Gymnema sylvestre*, a plant in-

digenous to East Africa and in the East Indies adjacent to Bombay. It resembles crysophanic acid, but has the peculiar property of destroying the sweet taste of sugar and saccharine liquids, as also the bitter taste of substances like quinine. It is extracted from the leaves by water and precipitated by sulphuric acid, being in combination with a base not yet investigated. Its employment for pharmaceutical purposes, however, must remain speculative until its therapeutic properties are further investigated.—*Western Druggist*, July, 1887.

The powdered root has for a long time been used among the Hindus for snake-bites. It is applied locally and taken in the form of a decoction internally. The most curious property of this plant is its effect upon the sense of taste. When the leaves are chewed, all power to appreciate the taste of sugar ceases. Powdered sugar tastes like so much sand. When an insufficient quantity of the leaves are chewed the sugar has a saltish taste. In gingerbread the taste of the sugar disappears and that of the ginger alone is detected. A sweet orange tastes like a lime. Sulphate of quinine tastes like so much chalk. The effect seems to last for several hours. The active principle of the leaves Mr. Hooper calls gymnemic acid. It does not affect the power of tasting sour, saline, or astringent substances.—*Albany Medical Annals*.

THE EFFECT OF HYOSCINE HYDROCHLORATE.

KOEBER, of Dorpat, Russia, is quoted as follows by *Schmidt's Jahrbuch*, 1887, No. 6, in the results of his use of this drug as a sedative:

Hyoscine, when given in large doses, is excreted as such by the kidneys. A small amount of the urine of an animal thoroughly under the influence of hyoscine, when dropped upon the heart of a frog which had been poisoned by muscarine, will cause the heart which was quiescent to beat. Hyoscine is thus an antidote to muscarine. In the same way, muscarine, by its stimulant power over the pneumogastric, will cause a heart to beat which had been stopped by hyoscine. The effect of the drug is the same upon the human subject as upon the frog. In the case of a patient with melancholia, whose pulse was slow, an injection of $\frac{1}{16}$ of a grain produced a very perceptible acceleration. In small doses, of $\frac{1}{16}$ to $\frac{1}{8}$ of a grain, hyoscine is a weak narcotic to healthy human beings.

Numerous observations made upon the large numbers of patients at the Dorpat Clinics for Insane Patients have proved its excellence as a reliable hypnotic, when given subcutaneously in doses of $\frac{1}{10}$ to $\frac{1}{8}$ of a grain of the hydrochlorate. A peculiarity of the use of hyoscine was the absence in the cases noted of all ill after-effects produced by the drug.

THE ADMINISTRATION OF OPIUM.

There are few drugs more commonly prescribed than opium, and it is certain there is none more abused or more carelessly combined. Of its numerous official preparations it cannot be said that their individual actions are free from the disagreeable after-effects which characterize that of the pure drug. The problem is to get all the good effects of the drug, and yet to obviate the resulting headache, sickness, and loss of appetite caused by arrestment of the secretions of the alimentary canal. This, of course, refers to medium doses. Belladonna or atropine have for long been given in combination with opium, but in these respects the result has been mostly a failure, the reason being that while the actions of these drugs on the central nervous system are to a certain extent antagonistic, their actions on the alimentary secretions are much the same. For some time Dr. A. G. AULD (*Lancet*, July 16, 1887) has given opium in combination with ether with good results, ether being one of the most powerful secretion stimulants we know. He generally prescribes equal quantities of tincture of opium and spirit of ether, and though not claiming for this a specific effect, thinks it a good and most useful mixture.

A FORMULA FOR NAPHTHALIN IN PILL FORM.

BERNBECK has found that a pill covered with elastic collodion is especially useful in administering this drug. His formula is as follows:

R Naphthalini resublimat., 10 parts;
Rad. althæe pulv., 5 parts;
Mucil. gummi arab., q.s.
Ut. fiant pilul. 100.

Dry without heating, and cover with elastic collodion.
Sig.—Two or three pills three times daily.

The remedy is especially useful in gastrointestinal catarrh.

The advantage of the collodion coating is found in the fact that it is dissolved in the

intestine and not in the stomach, and that no unpleasant taste is experienced from gastric eructation. For the success of the collodion coating it is essential that the pills be carefully dried before its application.—*Deutsche-Amerikanische Apotheker-Zeitung*, June 15, 1887.

THE TREATMENT OF FRACTURES OF THE FEMUR.

DR. THIRIAR, in an instructive clinical lecture to the Brussels medical students on the treatment of fractures of the thigh, pointed out the advantages of the telescope apparatus proposed and described by Professor Dero-baix some seven years ago. This consists, firstly, of a starch bandage reaching from above the knee to the foot, provided with a stirrup and a cord, which passes over a pulley, and has a weight attached to the end in order to keep up constant extension; and, secondly, of a femoro-pelvic starch bandage, which is applied two or three days after the first bandage, the upper part of which it covers so that the one may slide within the other in telescope fashion. When dry, the femoral portion is slit up. It can thus be opened and the seat of the fracture inspected at pleasure, and, if necessary, manipulated by the hands, while an assistant makes any required degree of traction on the leg. Afterwards it can be tightened up by straps and buckles, with which it is provided, and the limb is then absolutely protected against all lateral or see-saw movements, while the patient can be moved as is necessary for purposes of cleanliness without endangering the rigidity of the fractured limb. By this means Dr. Thiriari believes better results can be obtained than by any other apparatus; and he publishes a list of thirty cases, in all but two of which there was either no shortening or so little that it did not amount to a quarter of an inch. In one of the two unsuccessful cases the patient was excessively unruly, and in the other no amount of manipulation appeared to reduce the deformity when first seen.—*The Lancet*, July 2, 1887.

VOLKMANN'S ANTISEPTIC LIQUID.

Thymol, 1 part;
Alcohol, 10 parts;
Glycerin, 20 parts;
Water, 100 parts.

The above, as used by the German surgeon whose name it bears, is a useful formula for antiseptics by thymol.—*Deutsche-Amerikanische Apotheker-Zeitung*, June 15, 1887.

*SALICIN IN THE TREATMENT OF
SCARLATINA.*

Salicylate of sodium and salicin have been highly recommended for the treatment of acute tonsillitis, when given early after a free purge, when the disease will with almost a certainty become arrested. If the tonsils have become swollen and hard, or if pus has formed, nothing, of course, will prove effectual, and the disease will run its course.

MR. W. P. MEHARRY writes to the *British Medical Journal*, July 2, that in scarlatina, especially in that known as scarlatina anginosa, salicin is of great value, and in those cases of simple scarlatina in which the disease is prolonged by the throat complication salicin immediately effects a cure.

Mr. Meharry generally gives to a child four or five years of age 5 grains of salicin every two hours until the temperature becomes normal. Afterwards the same quantity three times daily for a few days to prevent a relapse.

Reviews.

A TREATISE ON DIPHTHERIA HISTORICALLY AND PRACTICALLY CONSIDERED, INCLUDING CROUP, TRACHEOTOMY, AND INTUBATION. By A. Sanné, Docteur en Médecine, etc. Translated, annotated, and the surgical anatomy added. Illustrated with a full-paged colored lithograph and many wood engravings. By Henry Z. Gill, A.M., M.D., LL.D., etc.

St. Louis: J. H. Chambers & Co., 1887.

This is a very complete work upon diphtheria, leaving very little unsaid, and to which the surgeon as well as the practitioner can refer with the certainty of finding what he wants, if it is possible to find it anywhere.

Its leading chapter covers the ground of "Tracheotomy in Children." It is profusely illustrated with an excellent series of woodcuts, which are invaluable to the operator. The main portion of the book, devoted to diphtheria, embraces chapters on its localization, course, duration, and termination, recurrence, epidemics, nature, sequences, complications, prophylaxis, etc. In treatment the author views all specific lines of medication with cynicism. Tried by the cold glance of statistics they fail to do the wonders they promise. He does not believe in iron, in alkalies, in terebinthinate remedies; mercurials having been given, as he thinks, to diminish the fibrin in the blood, and the fibrin not being in excess, are, of course, absurdly useless, and, what is worse, dangerous. Support, restoration by food, alcohol, and local

disinfection may do some good. Tracheotomy should be early done. The attendant should not wait for obstruction.

Intubation is carefully and fairly treated. The author evidently considers it as a proved and established procedure of great value. Full directions are given for the operative work of intubation, and the chapter is carefully illustrated for the needs of the subject. The book is a thoughtful one, and contains a mass of valuable information.

E. W. W.

OUTLINES FOR THE MANAGEMENT OF DIET, OR THE REGULATION OF FOOD TO THE REQUIREMENTS OF HEALTH AND THE TREATMENT OF DISEASE. By Edward Tunis Bruen, Assistant Professor of Physical Diagnosis, University of Pennsylvania; one of the Physicians to the Philadelphia and University Hospitals; Lecturer on Pathology in the Woman's Medical College of Philadelphia, etc.

Philadelphia: J. B. Lippincott Company, 1887.

To know what to eat and when to eat it is better than the possession of any extant elixir of life. Such knowledge is one-half of hygiene and one-half of medical treatment. Starvation slays many and gluttony more, but a wise diet protects a man from far more dangers than he dreams of.

To know a subject well one should master its general principles. To order a proper diet for one's self or another, we should understand the physiology of digestion. This our author gives us briefly in his chapter on "Points on the Physiology of Digestion." Another important matter is the varying diet required for varying age. The diet for the infant must differ from that suited to the mature or the aged. How it differs and why, we learn in the chapter on "Regulation of Food to the Requirements of Health in Different Periods of Life."

In "Liquids Used as Beverages" the author studies tea, coffee, cocoa, and the much-disputed alcohol question. "Certainly in health," he says, "or in chronic diseases, its use is for the most part undesirable as a food." "In advancing life it can be guardedly used." The contamination of water, and the value of pure water as a beverage, are briefly but carefully discussed. The fundamental principles of infant feeding are well explained in the chapter on "Special Plans of Diet," which is followed by one on the "Amount of Food required by the System." Chapter vi. tells us how to grow fat or lean, as we happen to need the advice, and the remainder of the book is devoted to "Diet in Special Diseases," in which the seeker can find many valuable hints, many

ways perhaps unthought of, but here suggested, which may prove of more value to the sick than any amount of mere drugging. In fact, the book is well worth owning.

E. W. W.

HANDBOOK OF PRACTICAL MEDICINE. By Dr. Hermann Eichhorst. Vol. III. and Vol. IV. New York: William Wood & Co., 1886.

Vol. III. of the series of volumes composing this handbook is devoted to diseases of the nerves, muscles, and skin, Vol. IV. to diseases of the blood and nutrition, and infectious diseases. Throughout both volumes the student will recognize the same minute handling of all subjects which gives the work its great value. The chapters on diseases of the nervous system and muscles, especially, are profusely and excellently illustrated. Vol. IV. is, perhaps, more likely to interest the average professional reader. The section on diseases of nutrition opens with a chapter on "Obesity," which, in terse language, sums up the most recent views on this subject. The chapter "Diabetes Mellitus" is quite elaborate and gloomy, the author considering all remedies, apart from rigid diet, as of very uncertain efficacy. He makes no mention of the arsenite of bromine, and while doubting the value of opium in large doses, remarks that the reports concerning arsenic are "less favorable than those concerning opium." Duhring's claim to have cured a number of cases by pursuing a certain dietetic regimen he regards with derision. For salicylic and carbolic acids, as recommended by Ebstein and Mueller, he says, "We must experiment with these remedies, since different patients react differently," which will be taken by some as but one more instance of the German scientific method of regarding patients as only so many chemical combinations. In the chapter on "Rickets" the author advises lime-water, more animal food, fresh air, without urging the child to walk, cod-liver oil, and a bath of salt water.

Regarding scarlet fever, we find that the author endorses the view that the diphtheritic complications of the disease are manifestations of true diphtheria, for which scarlet fever "creates a predisposition," though the different clinical behavior of the scarlatinal from the ordinary diphtheritic membrane is noticed. With the exception of lukewarm baths, the author makes no special recommendation in treatment.

Rötheln, which the author uses as synonymous with rubeola, the author considers as

a distinct infectious disease independent of measles or roseola. The diagnosis from measles, scarlatina, and roseola "is not always possible." For erysipelas the best local application, in the author's opinion, is carbolic acid dissolved in turpentine, 3ss to ʒi of the latter, applied every hour. When gangrene occurs the parts should be dressed with acetate of alumina, one or two per cent. solution. The only internal remedy mentioned besides enemata of antipyrin is potassium iodide, gr. vii, every two hours.

The author gives herpes of the pharynx and larynx a definite description, which could be read with profit by several recent writers. He has found the vesicles in one case by the laryngoscope on the posterior surface of the uvula.

Under the caption of "Sweating Sickness" he describes miliary fever, directly tracing it back to the historic epidemics of the disease from the fifteenth century. It appears in epidemics, generally in summer, and is "an independent infectious disease." Under the subject of vaccination the author has written a very valuable chapter. The author advocates humanized virus, makes light of any danger, if properly selected, and considers that by the use of bovine virus, among other dangers, there is incurred a considerable one,—of the introduction of tubercle. All animals from whom lymph is taken for human use should be killed and examined carefully. When vaccination is followed by the appearance of "pock-like vesicles over the entire body" it is due to "accidental combination with varicella." In the chapter on "Cholera" the author expresses his belief in quarantine of the strictest character. In the treatment of this disease he recommends rest, very little food, weak broth, and a combination of ipecac and calomel every three hours. Venereal disease and tubercle and diphtheria occupy the remaining portion of Vol. IV. Taken as a whole, the "Handbook of Practical Medicine" is a work of great value, and the publishers are to be especially commended for placing it in its accessible and cheap form before the medical public.

E. W. W.

A MANUAL OF WEIGHTS AND MEASURES, WITH RULES AND TABLES. By Oscar Oldberg, Pharm.D. Second Edition.

Chicago: Charles Johnson, 1887.

A knowledge of the metric system is becoming every day more and more essential to enable one to keep abreast with the progress of medical science. A great proportion of

recent discoveries first appear in continental literature, where, it is needless to say, the metric system is now solely employed. In the majority of abstracts of foreign papers, on which physicians who, unfortunately, are ignorant of French and German are compelled to rely, as a rule, the metric system is reproduced. In the *GAZETTE* we make it a point to transpose the quantities from the metric to apothecary's measure, giving the figures in both systems, but it is evident that such translations of the metric system can only be approximate unless we run into complex fractions, and sometimes these translations may be overlooked. We have, in the columns of the *GAZETTE*, several times furnished our readers with tables for the convenient conversion of the different systems of weights and measures, but for an extension of the subject we would refer to Dr. Oldberg's book.

Dr. Oldberg's treatise on metrology includes in a compact space everything pertaining to the subject which can be of necessity. It contains the elements of metrology; the relations between metrological systems and arithmetical notation; a brief review of the development of weights and measures; the demands of practical medicine and pharmacy in the matter of subdivision of the units employed; the metric system; American and English weights and measures; the relations of weight to volume; specific weight; specific volume; the construction, use, and preservation of balances or scales, weights and measures, and of alcoholometers, urinometers, and other hydrometers; and extensive tables of equivalents; while the application of weights and measures to prescribing and dispensing, and to the construction of formulæ for liquid preparations, have received merited careful attention.

Correspondence.

LONDON.

(From our Special Correspondent.)

We are now enjoying one of the most beautiful summers we have had for years in England. Nothing in the way of weather could have been more fortunate, for we have resigned ourselves during the past fortnight to the delights in connection with the jubilee of our gracious queen. Summer in England is a season when visitors, whom we have in such numbers at present, may study this

people with profit. The Anglo-Saxon race gives full play to some of its leading characteristics in the lovely evenings of June and July. From the youngest to the oldest all are out of doors and enjoying themselves in the thoroughly national or racial fashion of taking laborious exercise. Every village green is at this moment covered with cricketers; every lawn is the scene of an earnest contest at tennis. I often ask myself what our neighbors across the Channel think of all this. I know how amazed Orientals are to see our brothers in India and China taking violent exercise in the sun as the most enjoyable of pleasures. I wonder how far our friends on the other side of the Atlantic yield to the same manly enticements. And all this is often before my mind, because I cannot help connecting the health of our English people, and their position on the earth, with their undying love for robust sports. Nothing seems too much for our boys in the way of muscular expenditure. Thousands—very likely tens of thousands—of bicycles and tricycles must carry their riders out of London every Sunday. Thousands of us spend Sunday on the Thames,—anywhere within fifty miles of the metropolis. I can imagine that when you read of our regattas and cricket-matches you may conclude that our boys take to the same forms of amusement to copy their seniors. The order is just the reverse: our famous oars- and batsmen have grown out of youngsters who took to boating and cricket with their companions as soon as they were breeched! These are our national games and occupations. A master who cannot play cricket creditably stands a poor chance of election to a post in a public school, however distinguished he may be as a scholar or mathematician.

Now it appears to me that all this has a more than ethnical interest to us: it bears upon the pathology and the therapeutics of the diseases which we, as medical men, are called upon to study and to treat. We hear very much at the present time of change in the type of disease. We are told that disease is now less "sthenic" and more "neurotic;" that nervous disorder is greatly on the increase, and that even in nervous disorder the type is changing,—that lunatics are now mainly melancholic and less often maniacal; that the maniacal cannot bear depressants, but recover under sustaining nutritive treatment. No doubt there is much truth in all this. No other result could well be expected to follow the change of thought, of labor,

and of surroundings wrought by the railway and the telegraph. But I believe our fears are greatly exaggerated. Whilst we have a lamentable number of break-downs in a nervous direction, the backbone of our population may be complacently regarded as healthy and of well-balanced constitution. Boys and girls, men and women alike, they show no sign to any eye of national degeneration. The feminine sex are in their way as active as their brethren. Tennis has been nothing less than a national blessing in the effect it has had in bringing women out of doors and keeping them active and happy for hours in the fresh air. A week ago a Scotch girl was Senior Classic at Cambridge,—for the first time in history a woman carrying off the highest classical instruction of the year. Do not interpret this event, if you please, to mean that our daughters are all taking to Greek and Latin. This week we are scanning with equal interest and excitement the report of the progress of the tennis tournament at Wimbledon, where ladies figure very largely. My belief is that whilst those of us who do suffer and break down may do so more in a neurotic direction than was the case fifty years ago, the actual number of the sick and the delicate is actually less. This is a fact about which I believe there can be no doubt; but it is a fact that appears to be overlooked by those who harp upon the decline of the English people. Its bearing is to be traced also in treatment. Nervine tonics are all very good in their way, but we are returning here to common sense and calomel, and getting better results than we got a few years ago from quinine and strychnine. Venesection and tartar emetic may never come again to be our sheet-anchors in fever, but we have lived to see it proved—though as yet not practically confessed—that our so-called nutritive system of treatment in typhoid, beef-tea and jellies, is little short of a system of starvation, and yet wonderfully successful.

Sir John Lubbock, whose name is familiar to your readers as at once a distinguished *savant* and politician, to whom the very class of whom I have been speaking—the young working population of our cities—owe their precious bank-holidays, has just been delighting us with his views on certain points connected with our profession. Improving the occasion of the distribution of prizes at Charing Cross Hospital last week, Sir John reminded his audience that medical treatment as now taught and practised is by no means so “natural” as most of us seem to

regard it. It is at first sight scarcely conceivable that there are other ways of treating disease than for the doctors to bring patients under the influence of well-understood natural forces, whether medicinal or non-medicinal. But in truth the very opposite method is practised in some parts of the earth, and probably was practised here and with you in earlier—indeed not very remote—times. Under this system the doctor swallows the physic, the patient not. The physic works upon the medicine-man and enables him to exorcise or otherwise combat the evil spirit that haunts or possesses the sufferer. As Sir John Lubbock wittily remarked, this system may be all very good in uncivilized countries, but it is not likely to commend itself as pleasant, practicable, or profitable to us who covet an extensive practice, and who might not recover with sufficient rapidity from the successive doses to sustain a popular reputation. Truly, from strange beginnings and by an interesting process of evolution has our present therapeutics been perfected.

I find the recent numbers of the *GAZETTE* furnished with valuable reports of M. Bergeon's treatment of phthisis as it is practised in the States. We hear less of the system with us than one might have expected, considering the prominence given to it at first. In England it must have been received with distrust, for it created no enthusiasm. As a matter of fact, I have been told more about the value of gaseous enemata by friends returning from the continental stations than I have learned from the staffs of our different hospitals for consumption. Very different have been the opinions thus expressed to me. In the Alps, at Davos, to wit, the results have been anything but encouraging, and the estimate of the value of the system given me a few weeks ago by one of the most distinguished practitioners of that place was decidedly unfavorable. *Per contra*, one of the best known English physicians on the Riviera assured me the other day that he had seen unquestionably good results from the Bergeon enemata. The sulphide of carbon, which I understand M. Bergeon now recommends, is said to be not altogether safe, and must not be employed in the somewhat casual routine fashion prescribed by some of our French *confrères*. It is evident there is but one way of settling this question,—by hard facts. I can see no *a priori* reason for the employment of sulphuretted hydrogen in phthisis,—certainly none for its administration *per rectum*, for we know nothing of the effect of

the liver upon hydrosulphuric acid conveyed to it in the portal blood,—an action on which M. Bergeon appears to have forgotten to reckon. The results of carefully observed cases ought to be the only argument admitted. As for the effects of this method on asthma, that is another matter,—a matter of treating a highly complex neurosis by a novel, startling method which is certain to have a temporary success.

In one of my letters to you I referred to Mr. Victor Horsley's operations on the brain, and mentioned a case of cerebellar tumor which had been removed,—unfortunately, without good result. I have now to chronicle an extension of the surgical treatment of disease of the central nervous system in a direction which was plainly indicated by all our recent knowledge in this province of pathology. A week or two ago Mr. Horsley removed a tumor from the spinal cord with complete success at the time, and, I trust, with ultimate relief of every symptom. We are now so well acquainted with the symptoms of tumor of the cord and its meninges, that there can be no doubt this operation will be speedily repeated, and, indeed, come to take its place among the legitimate and most successful of surgical procedures of the first magnitude.

Since the publication of my letter of June we have had the publication of the report of the committee on Pasteur's method of treatment for the prevention of hydrophobia, the principal points of which I correctly anticipated. The pronouncement of the committee in favor of M. Pasteur has been heartily welcomed by the English press, both lay and professional. Before many days are over I have little doubt but the government will be asked what practical use they intend to make of the finding of the committee,—a finding which, if it do not express a recommendation of the establishment of a Pasteurian institute in London, certainly suggests that our government ought to provide the means of immediate inoculation to the unfortunate victims of rabid animals much nearer home than Paris. Let us hope that the vaccination department of the Local Government Board may at once take this matter up and put the method into practice.

PARIS.

(From our Special Correspondent.)

Is alcohol incompatible with pepsin? is one of the many questions of therapeutics that has most divided chemists and practitioners,

and has caused the greatest divergence of opinion. The controversy is of perhaps fifteen years' standing, if not more, for some thirteen or fourteen years ago it was already discussed by Mr. Phillipp, before the Alumni Association of the New York College of Pharmacy. The Paris Société de Thérapeutique, an association including both physicians and pharmacists, recently gave the question another overhauling, the conclusion of which may fairly be said to be that alcohol is and is not incompatible with pepsin, according to circumstances. Dr. Bardet, Dr. Dujardin-Beaumetz's *chef de laboratoire* at the Cochin Hospital, led the discussion with an elaborate paper, well supported by experiments, and gave it as his opinion that up to twenty per cent. of alcohol is a proportion that pepsin solutions can stand with perfect impunity. Above twenty-five and up to seventy per cent. the loss of digestive power is in exact proportion with the excess of alcohol introduced. Above seventy per cent. the ferment is killed, just as albumen is suddenly coagulated at a certain temperature. This property explains the inertness observed by M. Catillon in specimens of pepsin precipitated by alcohol from glycerin or watery solutions. As to the loss occurring when wine is used as a solvent, it should be attributed to the tannin, not to the alcohol of the menstruum. M. Pierre Vigier partly agreed with Dr. Bardet, his own experiments having convinced him that eighteen or twenty per cent. of alcohol does not seriously impair the digestive ferment, although its power be somewhat injured. For this reason the revisers of the French Codex were right in admitting to the official list, notwithstanding Dr. Vulpian's opposition, wine and elixir of pepsin, two excellent preparations. But Dr. Bardet maintained his position; his experiments are conclusive, and prove that a proportion of alcohol not exceeding twenty per cent. has no untoward effect on pepsin, and it is only when twenty-five per cent. is reached that the ferment begins to be injured; the same result may be accidentally produced when alcohol is too rapidly added to solutions of pepsin, because then a portion of the digestive ferment may come into contact with a destructive proportion of alcohol.

French physiologists appear to concur in the opinion that strychnine is one of the poisons that patients do not become accustomed to. In other words, *one never gets used to strychnine*. It is true cases are on record in America in which considerable doses of the

alkaloid have been taken without harm, but these occurred with alcoholic persons, and therefore under peculiar physiological conditions. At a recent meeting of the Société de Biologie, Dr. Chouppe, after relating experiments on dogs, concluded that the economy never becomes habituated to strychnine. For instance, the same dose was administered for seventy-five days in succession, and always had exactly the same effects on the animal, while any slight increase of quantity in the mean time brought on grave accidents. Dr. Brown-Séquard entirely agreed with this opinion, a conclusion he had reached himself long before. A patient will take with impunity doses of strychnine very closely approximating the quantity sufficient to cause convulsions, or at least contractions. But once this point has been reached, the slightest possible increase of dose will be followed immediately by a general tetanic state. Hence we find neither an acquired habit nor accumulation accidents. He had also observed that strychnine is more rapidly absorbed on certain days than others, even when the precaution is taken to administer it after meals. Yet he thought French physicians are too timid by far in exhibiting strychnine, as it can be exceedingly useful in cases of organic paralysis, medullar affections, certain forms of chorea, etc., provided it be administered in nearly convulsivant doses. The two extremes to be avoided are, on one side, insufficiency, and, on the other, too rapid an increase of the beginning dose.

Acetanilide useless in Epilepsy.—When a new medicament is discovered it is often apt to be overestimated. For this reason, next to knowing what a substance is good for, perhaps the most important is to learn in which cases it is useless, or worse. Owing to its general therapeutic properties, Dr. Faure, of the Bicêtre Hospital, was led to administer acetanilide (antifebrin) for epilepsy, in Dr. Deny's service. The report which he has made is decidedly unfavorable. The patients, five in number, were treated for two months and a half, and carefully observed two months after the medication had been suspended. The medicine was given in increasing doses from 50 centigrammes to 2.50 grammes (8 to 40 grains). The patients while under treatment were affected with some of the symptoms already known, and more especially with cyanosis of the extremities and face, which would never fail to appear after two days, and rapidly disappear when acetanilide would be withheld. As regards therapeutic effects, they have been absolutely nil.

Far from improving, four of the patients out of the five experienced many more fits during the treatment than within the same time before. Three of the patients even had the number of fits almost doubled. It may be that some coincidence has affected the results, but it must be confessed they are really far from encouraging.

Medical Jurisprudence.—French courts hold that between a physician and his patients an implicit agreement exists respecting the fees, which cannot be changed without explicit notice. A recent case in which the jurisprudence was applied was as follows: Mme. L. was in the habit of being attended in her confinements by Dr. N., and every time one hundred francs (twenty dollars) was the fee paid and accepted. Lately, after requiring Dr. N.'s medical attendance under the same circumstances, she was served with a bill for forty dollars, which she refused to pay. Dr. N. had, it seems, risen in the world, and thought his services worth twice as much as before, while Mme. L. contended she had received no notice of the increase, and was not therefore liable to pay more than usual. The court of Paris gave a judgment in favor of the patient, affirming the well-settled principle that if a physician has a right to enhance his scale of fees whenever he sees fit, he should give notice of the fact to his regular patients, to enable them to either have his attendance on the new conditions or to call in another physician.

Morphinomania, the fashionable vice of the period, scarcely less baneful than the more popular alcoholic intoxication, may, perhaps, not attract much public notice. But it is a mania of much concern to the medical profession, the more so that they often feel they have been the cause, direct or indirect, of the morphine-habit contracted by their patient. Many are the cures suggested for the evil; some are probably good, still, prevention is better, and Dr. Germain Sée, acting with this end in view, in a paper read before the Academy of Sciences has frankly proposed *antipyrin as a substitute for morphine*, whenever the physician only wishes to allay pain, and expects nothing more from the usual therapeutic effects of the opium alkaloids. He gives antipyrin in hypodermic injections, half a gramme of the substance with half a gramme of water to fill a Pravaz syringe. The injection is administered in the same manner as morphine; and after a short period of unpleasant tension the pain, whatever may be its cause, is greatly relieved, without the

sleepiness and the artificial, pleasant excitement which frequently leads to the morphine-habit. Besides, antipyrin often possesses a curative effect lacking in morphine. Many cases of articular and muscular rheumatism, acute and chronic gout, neuralgia, zona, lumbago, etc., successfully treated with antipyrin were detailed by Dr. Sée; but as morphine would have not been contraindicated with such patients, the main advantage was that the physician would feel his medication had not led a fellow-being to become a morphinomaniac. In other complaints, however, morphine is distinctly harmful, and antipyrin should be substituted. With patients suffering from biliary calculi, for instance, the administration of morphine has, it is true, a sedative effect on hepatic colics, but it has also the inconvenience of decreasing biliary and intestinal secretions, thus interfering with the flow of matters, and supplying the occasion for more suffering. Antipyrin, on the contrary, rapidly stops the pain without causing any visceral disturbance. The same is true of nephritic colics; they are relieved, with the important advantage that the flow of urine is not decreased, while morphine, by suppressing the urinary secretion, is liable to bring on grave complications. For painful affections of the heart and angina pectoris antipyrin is indicated as a substitute for morphine in injections, because it is equally effective, at least, and causes no cerebral disturbance. When given for asthmatic oppression and suffocating fits, antipyrin cures the patient without suppressing the bronchial secretion. In all the foregoing instances the superiority of antipyrin is therefore well established, but in all cases it has a considerable advantage over morphine. As it does not afford the patient the peculiar inebriating sensations sought by opium-eaters, it is not liable to make of him a morphinomaniac, and relieves his pain quite as effectually as morphine does. To conclude the chapter on the new chemical favorite, Dr. Choupe, in a communication made to the Paris Society of Biology (July 16), recommended *antipyrin in uterine colics*. He administers 1 gramme of it in a rectal enema, with the best results. In one case of severe uterine griping after accouchement, the dose had to be repeated in the course of a few hours, but the pain was permanently relieved. In another instance, a patient suffering from most intense colics on each periodical return of menstruation obtained complete and permanent relief a quarter of an hour after being given an enema of antipyrin. Formerly she

had to be treated with large doses of laudanum, or enough chloral hydrate to produce sleep. From Dr. Choupe's experience it would appear as if antipyrin could also be substituted for chloral hydrate, a medicine that is liable to be perverted into an intoxicant quite as readily as morphine is. In fine, there seems to be much praise now bestowed upon antipyrin. But we may soon expect to be shown the other side of the medal, with, probably, a tendency to run into the opposite extreme.

PARIS, July 22, 1887.

BERLIN.

(From our Special Correspondent.)

The medical life of our national capital is for a time at rest. Professors and students have departed for their summer vacations. The rooms of the medical societies became too warm for even their most eager attendants, therefore the last meeting has been held, and now it is quiet until September, and, after all have recuperated themselves at baths or in the country, the great meetings of the Naturalists and Physicians, the Vienna International Congress for Hygiene and Demography, will make the centre for all who possess a mind for scientific research and enable them to unite in their work. A number of German medical celebrities intend to undertake the trip across the ocean in order to attend the International Medical Congress in Washington. The interest, however, will not be very general; not on account of the expensive and long journey, for the majority of our leaders in medical sciences have a very widespread and profitable consulting practice, but in the leading German circles there is greater interest and sympathy felt with the originally appointed and arranged committee in Copenhagen than in that which was substituted later; and, besides, the Berlin Medical Society, which gives the tone to these things, decided at its last meeting not to send an official delegation to Washington. In this decision one may perceive the sensitiveness which the delegates to the Congress in Copenhagen felt in consequence of certain precedents which the *Chauvanism* of the French members caused. We can only regret that such questions should be brought within the circles of science, and with this feeling wish that the attendance of German scientists at the Congress at Washington may be a large one, without regard to personal questions or national sensitiveness.

If I am to inform you of the circumstance which is causing the greatest interest in medical as well as non-professional circles, I must tell of the illness of the crown prince of the German empire. It is well known through the daily press of America that since January of this year the crown prince has been suffering from a hoarseness. Early in March, Professor Gerhardt discovered a swelling on the left vocal cord, which was treated with galvano-caustic. As neither this treatment nor a cure at Ems brought any visible improvement, the anxiety arose among the physicians who were called in that there might be a malignant growth, and the question of an external laryngeal operation arose. Professor von Bergmann, who was chosen as operator, would not, however, assume the responsibility of so difficult an operation until every means had been used to remove the swelling by internal laryngeal treatment. Therefore the English specialist, Morell Mackenzie, was called in consultation, and, fortunately, he was successful in three visits in removing three pieces of the swelling, which was sufficient to establish the nature of the disease after an examination. Virchow, to whom was intrusted the examination, as being the most competent in such matters, stated in his opinion, published in the German medical journals, that the swelling is a papillary growth united with epithelial proliferation,—pachyderma verrucosa,—and gave a favorable prognostication.

The crown prince is at present under Dr. Mackenzie's treatment, and English journals announce that his recovery is progressing favorably. It is a curious coincidence that just at the time that the crown prince is under the treatment of an English physician, in the Berlin medical faculty the most competent professors of rhinology and laryngology are establishing a clinic and polyclinic under the direction of Professor Bernhardt Fraenkel. This extension of the clinical institutes of the Berlin faculty is the creation of the Prussian kultusminister, Dr. von Gossler, to whose warm interest for the medical standard and medical instruction in the Prussian universities we are indebted for a large number of beneficial innovations.

One of the latest arrangements which is of importance to the medical clinics is the issuing of a clinical annual register, which was ordered by the ministry on the twenty-first of May of this year. This annual register will contain a condensed account of all medical clinics and polyclinics held by the ter-

Prussian universities, giving information as to their accommodations, their usefulness as institutions of healing, as institutes of instruction for the training of physicians, and as institutes for the increase of the knowledge of medical science, and besides, exhaustive statistical specifications of nosology, etc. When one considers that the Berlin University possesses no less than nineteen clinical institutions, one will be able to form some idea of the importance of this literary undertaking authorized by the government. If scientific medicine required it, the physician's position has lately received in Prussia a noticeable encouragement, and it receives a certain official recognition and co-operative assistance in all questions relating to the general health. In each province, through the choice of the physicians, a so-called committee of physicians is elected, the duty of which is to attend to all affairs connected with the medical profession, and to which all complaints and opinions must be brought. Through this the physicians obtain great influence in many matters in which they alone are competent, and, on the other hand, the government obtains a stronger position through the co-operation of the medical profession in all matters pertaining to hygiene. From this we are led to suppose great results will follow.

After all these communications of a general nature we must give a few therapeutic notices. W. Lublinski introduced a patient at the meeting of the Berlin Medical Society whose extreme stenosis of the trachea was greatly benefited by the catheterizing of the windpipe. The patient in his second year was tracheotomized on account of diphtheria. Since then he suffered with asthma, which gradually increased so that at his nineteenth year his inspiration was excessively labored, and audible at a considerable distance.

The examination of the trachea with the mirror showed in the neighborhood of the eighth tracheal ring a contraction across the trachea measuring four millimetres; particularly on the right was a strongly developed tendency to stenosis to be noticed, which contributed to the contraction of the trachea at this point. This point corresponded with the external tracheotomical cicatrix. It was therefore one of the rarest cases where the stricture of the trachea was not caused by syphilis, as was shown by the material changes in the spot referred to. The treatment was as follows: gradual dilatation of the contracted spot by an elastic catheter; beginning with a catheter of the size of four millimetres,

after eighteen applications the size had increased to 1.2 centimetre; as the ordinary catheters were not of sufficient size, Lublinski used conical rectal bougies; already after the fourth catheterizing the contraction was remarkably less, and after the eighteen applications the patient was entirely cured of his infirmity. In the same manner Lublinski has treated four other cases.

- In one case of syphilitic stenosis of the trachea, where below the vocal cords a diaphragmatic membrane appeared, he succeeded, after dividing the membrane by the insertion of the bougie, only in partially increasing the opening, because the patient withdrew from the treatment after his oppression had been relieved. In two cases of rapidly-growing goitre, he succeeded in relieving the occasional asthmatic oppression entirely; also in one case of parenchymatous goitre, with severe compression of the trachea by the isthmus, his treatment was successful.

Professor Ewald has attempted to use salol for diagnostic purposes. It would be possible to decide the time at which food goes from the stomach into the intestine if one could introduce substances into the stomach which would not dissolve there, but would quickly be dissolved in the intestine, and which would be rapidly evacuated and passed through the urine. Salol will not be dissolved in the stomach, as it is insoluble in water, and belongs to the warm, oily substances.

According to Nencki and Sahli, salol divides itself, through the influence of the pancreas, into salicylic acid and phenol, and it was, therefore, quite natural to attach these bodies to the decision of the question as to how quickly matters pass from the stomach into the intestines if one could observe changes in the functions of the pancreas. In a number of demonstrations it was firmly established that salol does not divide itself in the stomach, but the action of the pancreas could not be brought in question; then salol divides itself in the gastric warmth into quite weak alkaline solution; it even appeared that artificial preparations of the pancreas had a retarding influence upon the dissolution of the salol. In the same way the mucous membrane of the alimentary canal, as far as it does not acidify, is in condition to decompose the salol so that it seems to be destroyed by the tissues; it shows that in all healthy individuals salol decomposes in from a half to one hour, and could be recognized in the urine as salicylic acid. Out of thirty-nine experiments, in only one the salicylic acid appeared

after one hour, in six after a half-hour, and in all the others after three-quarters. In opposition to this in individuals in a normal condition, in eight cases of typical dilatation of the stomach the salicylic acid reaction appeared; in seven cases only after two or three hours in the urine; in the eighth case, where the diagnosis could not be decided in all directions, the condition seemed normal, and for this reason Ewald decided that the diagnosis in this case was questionable. The prolongation of the dissolution of salol by the dilatation of the stomach seems to be so typical that the late appearance of the same is calculated to influence the diagnosis of the disease, and, in fact, has influenced it in two cases.

At the last meeting of the Southwest German Association of Neurologists and Physicians for the Insane, which took place at Frankfort-on-the-Main, Professor von Mering announced that he had found a most valuable anæsthetic in amyl-hydrate (tertiary amyl-alcohol); that he has tried the same in sixty cases of insanity, paralytics, and melancholia, insomnia caused by nervousness, and in feverish diseases; a dose from 30 to 75 minims, sleep lasting from six to eight hours; no bad results; the taste is pleasant as that of paraldehyde. Von Mering gives this formula:

R Amyl-hydrate, ʒi;
Aque dest., ʒx;
Ext. liquirit., ʒi.

Dr. Faust (Dresden) recommends in the *Deutsche Med. Wochenschrift* antifebrin in doses from 0.5 to 1 gramme for headache. He noticed upon himself that migraine which defied all other remedies disappeared entirely in from half an hour to an hour's time after one of the above doses; he has obtained the same results in many other cases.

"SNAKE-BITE WEED."

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—I send you by this mail a plant which grows here. It is known as "snake-bite weed." It is regarded as a specific among the natives for the bite of any and all of our poisonous snakes. It has been used by the laity in many cases, in the form of a decoction made by boiling the leaves with sweet milk, and in every case with the most happy results. A few years ago, in our county of Gibson, Dr. A. E. Turner, of Yorkville, Tenn., was treating a case of snake-bite after the most approved methods. The pa-

tient was failing rapidly ; had been bitten by a "cotton-mouth" (if my memory fails me not). The family asked permission to send for a man not far off, who was known to be able to cure snake-bites. Dr. Turner consented. The man came, hunted up the weed of which I send you the specimen, took a handful of leaves, poured on a pint of boiling milk, and as soon as cool enough to administer began with it. He administered the infusion in copious draughts, using several pints. Result : rapid recovery in less than twenty-four hours of what promised to be a fatal case of snake-bite.

At the last meeting of the Gibson County Medical Society, held June 21, 1887, Dr. Stephenson, of Dyer, this county, reported a case he had treated of snake-bite a short time previously, in which alarming symptoms rapidly presented themselves. He gave morphine to allay the pain, and then trusted exclusively to the infusion prepared from this weed, as above described. From the very commencement of the infusion the patient began to improve, and in twelve hours was well. He used no alcohol in any form in his case. It is claimed that it acts more slowly in those cases in which whiskey has been used than where it has not been given.

It is stated that persons bitten by snakes, after tasting the infusion, crave it as long as the snake poison is active, but that as soon as counteracted they no longer desire it. I do not know the plant, hence send it to you to inquire what it is. I do not attempt any description, as you will have the plant before you. I do not know of its having ever been administered in bites of rattlesnakes, but in all of our other poisonous snakes.

The facts that I have stated can be vouched for by many reliable citizens and physicians. What is it, and in what do its virtues consist?

Yours very truly,

T. J. HAPPEL, M.D.

TRENTON, TENN.

[A very large proportion of men and larger animals bitten by poisonous North American serpents recover as a matter of course. If they have chewed any weed as a curative measure (which they usually do), no matter what worthless plant it may be, they attribute their recovery to said plant. Thus it happens that every section, almost every village, civilized and savage, throughout the world, has some plant that is spoken of exactly as our correspondent speaks of this. A mere list of the names of such plants would fill a good-

sized book. Such as have been examined have been found to be more or less inert, this being one of those that has been so investigated.

We have referred the specimen to Dr. H. H. Rusby, who informs us that it is *Hieracium*, probably *Hieracium Gronovii*, L., and from time immemorial has been known as "rattlesnake plantain," because it was supposed to be able to cure the bites of rattlesnakes.—Eds.]

A NEW REMEDY FOR NIGHT-SWEATS.

To the Editors of the THERAPEUTIC GAZETTE:

SIRS:—A regular physician myself, yet I have endeavored through my professional career to take anything which is useful in the practice of medicine from any other branch of medicine, believing, as I do, that so-called allopathy is or should be true eclecticism. We should cull from all ; the mineral and vegetable kingdoms belong to us, and we should not reject a medicine simply because its effects were first discovered by an eclectic, a homœopath, or even by a person not belonging to any school. We should remember that the abuse of aconite by our profession a hundred years ago caused the profession almost to quit the use of it until the sect of Hahnemann commenced to use it in small doses with good results. This taught us that we had abused it, and as a consequence we commenced its use again, in smaller doses than before, adopting a middle ground between former practice and homœopathy, and now what member of our profession would be without it as a remedy in many diseases?

Did we not gain some information here from another sect? Should we be ashamed to acknowledge the benefit? Surely not. I have been often of late years amused, when some new native remedy has been given to the profession, to turn back to King and find that he had used and recommended the same remedy years before. A few years ago *Phytolacca decandra* was brought out as a remedy for mastitis. King had used it and recommended its use years before. We all know the history (as given in the U. S. Dispensatory) of the discovery of gelsemium as a remedy in fever by an old planter in Mississippi ; yet our profession ignored its use until we were forced to use it by the success of the eclectic with it. Just so with one of the most valuable of our remedies in the treatment of the diseases of females, *Viburnum prunifolium*, although Dr. Phares, of Mississippi, called the

attention of the profession to it in an article published in *The American Journal of the Medical Sciences* in 1852. Until a few years ago our profession would not use it, and yet the eclectics have used it for years, and King, in the edition of his work published in 1870, recommends its use. I might go on until I would tire the patience of your readers giving similar instances, but these are sufficient to effect my purpose, which is to cause the profession to stop and think for themselves, and to resolve to take that which is good from any source, having the moral courage to "render unto Cæsar that which is Cæsar's."

I desire to call the attention of the profession to a vegetable remedy, native to our soil, for that troublesome accompaniment of wasting diseases, night-sweats. Do not throw this article aside with the exclamation that "atropine is good enough for me." Atropine is a good remedy, and in the majority of cases answers the purpose; but atropine is a very strong medicine, and must be used with great care. A simpler medicine, answering the same purpose, would certainly be better. I have it, and shall give it to you, and at the same time I shall tell you that it is not a discovery of mine. King recommends it, but I did not get it from him; *I got it from an old negro*,—from the same source that the profession got gossypium. If you can take that from them, why not take this, coming to me from the same source? The remedy is one indigenous to the whole country; it is therefore within the reach of us all; it is the cinquefoil, *Potentilla canadensis*, called by some botanists *Potentilla sarmentosa*. I have stopped night-sweats with it when *atropine failed to relieve*. It is pleasant to take; when drawn it has an agreeable odor, much like table-tea. The manner of preparation is to pour boiling water on a handful of the vine, leaves, and root. Let the patient drink *ad libitum*.

I hope that the members of the profession will give it a fair trial, and report the result through the columns of your valuable journal.

A supply can be obtained through the Southern purchasing agency of Messrs. Parke, Davis & Co., Charlotte, N. C., or through Messrs. Wallace Bros., Statesville, N. C., or, if not too busy, about your own homes. I hope that some manufacturing chemist will (should I be found to be correct in my estimate of it) give to the profession a fluid extract of the root and plant.

Yours truly,

SAMPSON POPE, M.D.

NEWBERRY, S. C., June 14, 1887.

TREATMENT OF EPISTAXIS.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—I have read for a good many years articles on epistaxis in many journals, and from apparently able writers, and have been a good deal surprised at the different ways recommended by the aforesaid writers regarding its suppression.

Now, it is a well-known fact to anatomists and others that the hemorrhage in the vast majority of cases proceeds from the septum nares, and is supplied by a branch of the superior coronary, a branch of the facial, which ramifies upon the septum nares. It enters the opening of the nose just below the alæ nasi, crossing the superior maxillary bone at that point.

Now, in a practice of nearly thirty years, I have had many cases of epistaxis, and have never in a single case failed to arrest the bleeding by compression of the aforesaid artery, with the finger applied over its track, making firm pressure against the bone. This will arrest the bleeding nine hundred and ninety-nine cases in a thousand. I have been called to see cases where other physicians had plugged the nostrils, and injected solutions of ferri persulphas, ice-water, etc., without benefit, and have at once arrested all hemorrhage instantly by the above simple means. Tell them to try it.

Yours truly,

J. ROBINSON, M.D.

MANHATTAN, KAN.

Notes and Queries.

THE REPORT OF THE ENGLISH COMMITTEE OF INQUIRY INTO PASTEUR'S TREATMENT OF HYDROPHOBIA.

The value or uselessness of Pasteur's inoculations for the prevention and cure of hydrophobia have called forth so much controversy that we deem no apology necessary for laying before our readers an abstract of the report on this subject signed by Sir James Paget, T. Lauder Brunton, Dr. Fleming, Sir Joseph Lister, Dr. Quain, Henry E. Roscoe, Dr. Burdon Sanderson, and Victor Horsley, with the editorial comments published in the *Lancet* on this report on July 7, 1887.

The report commences by stating that it was found necessary that some of the members of the committee should, together with Mr. Victor Horsley, the secretary, visit Paris so as to obtain information from M. Pasteur

himself, to observe his method of treatment, and investigate a considerable number of cases of persons inoculated by him; and, further, that a careful series of experiments should be made by Mr. Horsley on the effects of such inoculation on the lower animals. Mr. Horsley's experiments are stated to entirely confirm M. Pasteur's discovery of a method by which animals may be protected from the infection of rabies. If a dog, rabbit, or other animal be bitten by a rabid dog and die of rabies, a substance can be obtained from its spinal cord which, being inoculated into a healthy dog or other animal, will produce rabies similar to that which would have followed directly from the bite of a rabid animal, or differing only in that the period of incubation between the inoculation and the appearance of the characteristic symptoms of rabies may be altered. The rabies thus transmitted by inoculation may, by similar inoculations, be transmitted through a succession of rabbits with marked increase of intensity. But the virus in the spinal cord of rabbits that have died of inoculated rabies may be gradually attenuated by drying the cords, so that after a certain number of days' drying it may be injected into healthy rabbits or other animals without any danger of producing rabies; and by using on each successive day the virus dried during a period shorter than that used on the previous day an animal may be made almost certainly secure against rabies, whether from a bite or from any method of subcutaneous inoculation; and this protection is proved by the fact that if animals so protected and others not thus protected be bitten by the same rabid animal, none of the first set will die of rabies, and, with rare exceptions, all of the second set will succumb.

It may hence be deemed certain that M. Pasteur has discovered a method of protection from rabies comparable with that which vaccination affords against infection from smallpox. It would be difficult to overestimate the importance of the discovery, whether for its practical utility or for its application in general pathology. It shows a new method of inoculation, or, as M. Pasteur sometimes calls it, of vaccination, the like of which it may become possible to employ for protection of both men and domestic animals against others of the most intense kinds of virus. The duration of the immunity conferred by inoculation is not yet determined; but during the two years that have passed since it was first proved there have been no

indications of its being limited. The preventive treatment adopted by M. Pasteur is based on the foregoing experience; but the determination of the success of the method is far from easy, owing to (1) the difficulty of determining whether the bites were really those of rabid animals; (2) the probability of hydrophobia in persons bitten by dogs that were certainly rabid depending very much on the number and character of the bites, whether they were on exposed parts or parts protected by clothing; and in all cases in the amount of bleeding; (3) in all cases the probability of infection may be affected by speedy cauterizing or excision of the wounded parts, or by various washings, or other methods of treatment; (4) the unequal danger of bites of different species of animals, and even of different dogs. In some groups of cases the percentage of deaths among persons bitten by dogs believed to have been rabid has been estimated at only five per cent., in others at sixty per cent.; and the mortality from the bites of rabid wolves has been variously estimated at from thirty-five to ninety per cent.

By the courtesy of M. Pasteur the committee were enabled to personally investigate ninety cases treated by him, these being mostly those which had been earliest treated, in which the periods since inoculation were longest, and living within reach in Paris, Lyons, and St. Etienne. Among the ninety cases there were twenty-four in which the patients were bitten on naked parts by undoubtedly rabid dogs, and the wounds were not cauterized or treated in any way likely to have prevented the action of the virus; there were thirty-one in which there was no clear evidence that the dog was rabid; others in which the bite had been inflicted through clothes. It is estimated, from experience of the results of bites in other cases, that had they not been inoculated, not less than eight among these ninety persons would have died. Not one of them has shown since the inoculation any signs of hydrophobia.

Since, in order to quiet fears, M. Pasteur has been obliged to inoculate many in whom there was no satisfactory evidence that the bite was that of a rabid animal, it might be unjust to estimate the total value of his treatment in the whole of his cases as being more than the rate of mortality observed in them compared with the lowest rate observed in any large number of cases not inoculated. This lowest rate may be taken at five per cent.; and, as between October, 1885, and the end of December, 1886, M. Pasteur in-

oculated two thousand six hundred and eighty-two persons (including one hundred and twenty-seven from this country), the mortality should have been one hundred and thirty. But at the end of 1886 the number of deaths was thirty-one, including seven bitten by wolves, in whom the symptoms of hydrophobia appeared while they were under treatment; in fact, the actual percentage mortality was between 1 and 1.2, showing, on the lowest estimate, the saving of not less than one hundred lives. Of two hundred and thirty-three persons bitten by animals in which rabies was proved, only four died. Without inoculation at least forty would have died. Among one hundred and eighty-six bitten on the head or face by animals in which rabies was proved, only nine died, instead of at least forty. Of forty-eight bitten by rabid wolves, only nine died, instead of nearly thirty. Between the end of last December and the end of March, M. Pasteur inoculated five hundred and nine persons bitten by animals proved to have been rabid; only two have died, one of these, bitten by a wolf a month before inoculation, dying after only three days' treatment. The committee think it, therefore, certain that the inoculations practised by M. Pasteur have prevented the occurrence of hydrophobia in a large proportion of those who, if they had not been so inoculated, would have died of that disease. And his discovery shows that it may become possible to arrest by inoculation, even after infection, other diseases besides hydrophobia. His researches have also added very largely to the knowledge of the pathology of hydrophobia, and supplied a sure means of determining whether an animal which has died under suspicion of rabies was really affected with that disease or not.

The question whether the method itself entails risk to health or life is then discussed, the distinction between the ordinary method and the "intensive" method being pointed out. By the first method there is no evidence or probability of any danger to health at all; but after the intensive method, which is only practised in the most urgent cases, deaths have occurred which might possibly be attributed to the inoculations rather than to the original infection. Yet in the worst cases the intensive method is relatively more efficacious than the ordinary method, nor is the rate of mortality greater after the former method than after the latter. Certain cases, one of which is detailed, have, however, excited suspicion from the mode of death. The case related is that

of a man bitten by a rabid cat at the Brown Institution, treated by M. Pasteur the next day by the intensive method, continued during twenty-four days, and dying about a month later with symptoms of acute ascending paralysis. The man was very intemperate, and had been exposed to chill while crossing the Channel on his return home. Mr. Horsley proved that his death was due to the virus of rabies, by using a portion of his spinal cord for the inoculation of rabbits and dogs, who died with characteristic signs of paralytic rabies, such as usually occurs in rabbits. Yet it is by no means certain that the fatal issue in this and in other cases treated by the intensive method was not due to the original infection. M. Pasteur has, however, greatly modified this plan of treatment, which he employs in none but the most urgent cases.

The final paragraphs of the report, which embody practical suggestions, may be given *in extenso*:

The consideration of the whole subject has naturally raised the question whether rabies and hydrophobia can be prevented in this country. If the protection by inoculation should prove permanent, the disease might be suppressed by thus inoculating all dogs; but it is not probable that such inoculation would be voluntarily adopted by all owners of dogs, or could be enforced on them. Police regulations would suffice if they could be rigidly enforced. But to make them effective it would be necessary (1) that they should order the destruction, under certain conditions, of all dogs having no owners and wandering in either town or country; (2) that the keeping of useless dogs should be discouraged by taxation or other means; (3) that the bringing of dogs from countries in which rabies is prevalent should be forbidden or subject to quarantine; (4) that in districts or countries in which rabies is prevalent the use of muzzles should be compulsory, and dogs out of doors, if not muzzled or led, should be taken by the police as "suspected." An exception might be made for sheep dogs and others while actually engaged in the purposes for which they are kept. There are examples sufficient to prove that by these or similar regulations rabies, and consequently hydrophobia, would be in this country "stamped out," or reduced to an amount very far less than has hitherto been known. If it be not thus reduced, it may be deemed certain that a large number of persons will, every year, require treatment by the method of M. Pasteur. The average annual number of deaths from hydrophobia

during the ten years ending 1885 was, in all England, 43; in London alone, 8.5. If, as in the estimates used for judging the utility of that method of treatment, these numbers are taken as representing only five per cent. of the persons bitten, the preventive treatment will be required for eight hundred and sixty persons in all England; for one hundred and seventy in London alone. For it will not be possible to say which among the whole number bitten are not in danger of hydrophobia, and the methods of prevention by cautery, excision, or other treatment cannot be depended upon.

The editorial comments of the *Lancet* on this report are as follows:

The report of the Hydrophobia Committee has appeared at last, and, it must be confessed, its character supplies a sufficient reason for the delay that has occurred in its production. To consider the evidence that has been accumulated at the Pasteur Institute, and to form an opinion as to the alleged results, could not, indeed, have needed so long a time as a whole year; but to verify those results by independent investigation, to test the practical value of the inoculations as a means of preventing hydrophobia, must, it is evident, require a considerable time; and the Committee is to be congratulated on having attained a definite conclusion in the time they have taken.

The definite character of the conclusion reached will probably render the report a surprise to most members of the profession who have compared the divergent opinions that have been so freely expressed by men not ill qualified to judge, and have duly realized the difficulty of the investigation and the many sources of fallacy arising from the character of the facts themselves. It is certainly satisfactory that men so well able to weigh the evidence and to observe the facts, after having had the fullest opportunity of investigating the results obtained at the Pasteur Institute, should have come with one accord to an opinion so precise. Without doubt their verdict is the most important yet pronounced upon the subject, and must go far to decide the question of the prophylactic value of the inoculations of Pasteur.

The process itself was studied in Paris by three members of the Committee,—Sir Henry Roscoe, Dr. Burdon Sanderson, and Dr. Lauder Brunton. A series of experiments were instituted after the return of these members by Professor Victor Horsley, while the

other members of the Committee, Sir James Paget, Sir Joseph Lister, Dr. Quain, and Dr. Fleming, formed an opinion on the facts submitted to them. Those facts are fully stated in an appendix to the report, so that it will be possible for all persons who are interested in the subject to weigh the evidence and the conclusions. It can hardly be doubted that those who are competent to form an opinion will agree in the main with that expressed by the members of the Committee.

It must not be assumed that all parts of the report are of equal value. We have alluded to the sources of fallacy that lurk in the statistics of Pasteur; the members of the Committee have taken due account of them, and have endeavored as far as possible to avoid them. To eliminate them altogether is impossible, and the conclusions reached cannot have more than a very high degree of probability. But it is otherwise with the experiments instituted by the Committee: these are apparently free from all sources of error. They are not numerous, it is true, but their results are unequivocal, and seem to leave no room for doubt that the inoculation with the weakened virus of rabies confers an immunity from the disease. The inoculation with emulsion of the spinal cord of rabid rabbits preserved a series of dogs from rabies, although the most certain conceivable method of inoculation was employed,—a bite from an animal in the acute stage of the disorder. In no case did the animal contract rabies, whereas of other unprotected animals bitten at the same time the majority contracted the disease. The experiments thus seem to leave no doubt of the efficiency of inoculation in rendering harmless a subsequent infection. They prove that the malady, as produced by the attenuated virus, is trifling, and they thus confirm two of the most important statements of Pasteur. On the question whether inoculations, made after a bite has been inflicted by a rabid animal, confer the same immunity,—a question of paramount importance,—the original researches throw no direct light. But the confirmation of the conclusions of Pasteur, in so far as they have been reinvestigated, is not without its significance, for it naturally increases the readiness to accept also those conclusions that have not been the subject of independent study. The statistics of Pasteur have been subjected to a careful examination by the Committee, and the conclusion from the analysis is entirely in favor of Pasteur's method. A considerable number of cases were personally investigated, so far as inves-

tigation was possible after the lapse of a considerable time. The facts of these cases, the means employed to prevent infection,—washing, cauterization, etc.,—and the evidence as to the condition of the dog which bit the patients, are described in the appendix to the report. The conclusion drawn from these facts is that in many of the cases the dog was unquestionably rabid, and that a certain proportion of the sufferers would have died from hydrophobia if they had not been treated, and who, being treated, have not suffered from the disease. The conclusion that the method has saved a considerable number of lives, and that it is at present, and probably will be for long, the only mode of saving from death those who have been bitten by a rabid dog, affords strong support to Pasteur's conclusions, and, we need hardly say, must have most important practical results.

Nor is this all. By the opponents of Pasteur it has been alleged that the dangers of his inoculation are scarcely less than those of the bites of rabid animals. It has been stated that many deaths have occurred in consequence of the treatment, and that some of the patients have actually been affected with paralytic rabies in consequence of the inoculations. On this point also the verdict is in favor of Pasteur. It is, perhaps, doubtful whether this verdict rests on so firm a foundation as does that of the protective power of the treatment. The report confines itself to one of the cases of death after the treatment,—the case of the man Goffi, who was bitten at the Brown Institute, and died in St. Thomas's Hospital. On this case the report throws a new and startling light. It will be remembered that the cause of death was spinal paralysis, and its connection with rabies was denied. Mr. Horsley proves that the disease was paralytic rabies; the results of inoculations make the fact unquestionable. The treatment was certainly unsuccessful, and it is suggested that almost continuous intoxication may have prevented its success. Was the malady due to the original infection or to the "preventive treatment"? The Committee suggest the former as the probable cause, that paralytic rabies may be more common than is supposed, and that the disease known as acute ascending paralysis, or Landry's paralysis, may be, often at least, paralytic rabies. If this conclusion be correct, it is strange that paralytic rabies should not be observed more frequently as the distinct sequel to the known bite of a rabid animal. It seems more probable that, if the death of

Goffi was the result of the bites he received, the form of the malady was determined by the influence of the inoculations. But the conclusion of the Committee seems to be that, although the strong virus formerly employed may have entailed some evil consequences, the method now employed is free from serious danger.

We have said that the report of the Committee can hardly fail to have important practical results. The government has ordered the inquiry in response to a public demand, and, the verdict being so clear and strong, the establishment of a Pasteur institution in this country seems now to be their clear duty. Whatever other effect the report may have, it will certainly compel increasing numbers of persons who have been bitten by dogs, rabid or not rabid, to seek what is said to be a certain safeguard against a terrible possibility. That they should have to go to a foreign country for the treatment which the Government Committee consider some at least of the bitten persons will require, will be intolerable. The inevitable result of the report must surely be the establishment of a Pasteur Institute in this country, and, after such an answer as the government has received to its inquiries, the task can scarcely be left to private benevolence.

A CASE OF POISONING FROM CONIINE.

SCHULZ reports in the *Deutsche-Medicinische Wochenschrift* for June 9, 1887, the following case.

It is the custom of Professor Schulz during his lectures on materia medica to circulate among his hearers samples of the drugs lectured upon for inspection. The alkaloid coniine was so arranged that the characteristic odor was plainly perceptible to those who examined it. Although this custom had been observed for some time, no accident had occurred. On one occasion, however, after coniine had been exhibited, the lecturer was informed that a student had been poisoned by inhaling the exhalation of the drug. He proceeded at once to his lodging, and found the case as follows:

The patient, 22 years old, and strong and healthy, had, on the day previous, smelled of the coniine repeatedly, as he had a nasal catarrh, which made it difficult for him to obtain the odor. He noticed, on going to his lodging after the lecture, that the odor seemed to be still present. He was taken with a progressive enfeeblement of his limbs; he could

not keep his eyes open ; he had a painful sensation of burning about the conjunctivæ, and was finally compelled to lie down. The prostration increased, and power over the extremities was lost, although the sensorium was uninfluenced. Severe headache and strong pulsation in the temporal regions ensued. When found by an acquaintance and put to bed, some two hours after the patient noticed the first symptoms, he was almost speechless, the words being spoken very slowly and with great effort. After he was placed in bed a diffused sensation of heat was experienced, and those who were with him supposed fever to be present. This was followed by free perspiration and also profuse secretion of tears. The patient could not rest during the night. Confusion of ideas, images formed from surrounding objects, and utter failure of connected thought were observed. On the following morning the patient's condition was ameliorated : headache and prostration continued, but were less severe. The slightest motion, however, occasioned a profuse perspiration. The nasal catarrh, which the patient had before he was poisoned, had disappeared.

When seen by Schulz, twenty-four hours after he was poisoned, the patient presented no abnormal appearance. He gave a clear account of all which had happened, but complained of headache. Pulse full and soft, 88 ; temperature 98.7°. When he changed his position in bed the perspiration appeared in profusion upon the head, buttocks, and extremities. Constipation and loss of appetite for food and tobacco were present. The following night a normal rest was obtained, and the patient speedily recovered without treatment.

In the literature of the subject Pöhlmann has described the headache and supra-orbital pain following the giving of conium. Schroff and his pupils observed the diaphoretic action of the drug, and endeavored to define the production and limits of this effect. The general symptoms, the paralysis of the muscles about the eyes, the failure of speech and effect upon the circulation are typical of the action of the poison as described by Plato in his description of Socrates's death.

For a full account of cases of poisoning by this drug the reader is referred to Schulz's article on "Coniin" in Eulenberg's *Encyclopædia*.

UNCOOKED FOOD IN SUMMER DIET.

The discovery of animal alkaloids, their general recognition as a factor in the phenomena of health and disease, may perhaps induce many practitioners to reconsider their opinions with regard to fruit diet. No reasonable amount of fruit, if eaten when ripe and during proper seasons, will induce diarrhoea in healthy subjects. Many erroneously attribute summer dysentery or persistent diarrhoea to excessive indulgence in fruit. This doctrine we have always held to be an exaggeration. To the over-abused stomach, indeed, fruit may possibly prove inconvenient, for the digestive system may be so far impaired as to assimilate only with the greatest difficulty the most natural and wholesome of foods. With children, and robust and healthy people generally, however, this does not apply, and a fruit diet, so far from being noxious, will, on the contrary, prove highly beneficial. Its cooling and antiscorbutic properties are eminently calculated to purify the blood, cleanse the tongue, palate, and stomach, cause gentle and regular laxation, and, as a necessary corollary, induce a clear and fresh complexion. A person who indulges in fruit diet during summer will rarely feel that oppressive heaviness after meals, which is so commonly complained of, or be inconvenienced by heat rash. Meat necessarily contains a certain amount of ptomaines, the proportion of which increases during the hot months somewhat alarmingly, and it therefore really becomes an inappropriate food in summer. This applies even to those who are obliged to lead an active life. A heavy meal of animal food conduces to oppression, excessive heat, slow and irregular digestion, accumulation of ptomaines, and consequently induces over-production of the highly deleterious leucomaines. It would be well for practitioners to consider whether many of their patients should not be subjected to a new dietetic regimen during the hot months. We would recommend a liberal amount of fruit either directly before or at breakfast, banishing from the table the customary bacon and salt or cured fish. From the mid-day meal of people who dine late we would eliminate entirely every particle of flesh, and substitute either a diet solely composed of uncooked fruit and dry bread, brown or whole meal being preferable, or fruit and farinaceous puddings with milk. Great numbers of people, invalids and strong, active workers alike, would find such a change improve their health materially and increase their enjoyment of life to an extent

of which they can hardly conceive without a trial.

Fruit is of great medicinal value, for the free acid contained in it (in the case of the strawberry and gooseberry about one and a half per cent., in that of the raspberry and currant rather more), besides being an effective antiscorbutic, acts as a calcareous solvent. Free fruit diet, if persevered in more generally, would mean less gout, less gravel, less urinary calculi, and other more or less kindred diseases. In most cases an orange or lemon would be a far better "eye-opener" than the matutinal cup of tea or somewhat bilious rum and milk which certain of the public so delight in.

With regard to children, we consider that an unlimited diet of fruit would do no harm, always provided it was indulged in during the day, and not after a heavy meat meal, or late at night. Strawberries, gooseberries, plums, cherries, etc., are not only nourishing, but their use does away with the oppressive feeling so often suffered by children after meals, keeps them cool, and out of mischief. Almost invariably, when we trace inconvenience from fruit-eating in children, we find that the feast has been a clandestine one, and the distressing symptoms are probably due to over-indulgence in unripe or hot fruit. Proper supervision in the distribution of fruit to the juveniles is all that is required. Fruit should be ripe and cool; hot from the rays of the sun, it becomes less indigestible and more likely to do harm, often inducing more or less acute febrile symptoms, together with evidence of gastric disturbance. With the evident danger of alkaloid-poisoning before us, in this age when we rightly consider prevention better than cure, the profession should turn their attention more earnestly to the question of fruit diet, independently of the "grape-" or other "fruit-cure," the vaunted efficacy of which some are not unnaturally unwilling to credit.—*Medical Press*, July 13, 1887.

PROGRAMME OF THE INTERNATIONAL MEDICAL CONGRESS.

The Chairman of the Committee of Arrangements announces the following programme:

First Day—Monday, September 5.—The Congress will assemble at Albaugh's Opera-House at 11 A.M., and will be formally opened by the President of the United States, to be

followed by a short address of welcome by the Secretary of State; address by the President of the Congress; report of Secretary-General and Chairman of Committee of Arrangements. Adjourn at 1.30 P.M. From 3 to 6 P.M., meeting of the sections at their respective halls. Evening *conversazione* at U. S. Pension Hall from 8 to 11 P.M.

Second Day—Tuesday, September 6.—Meeting at 10 A.M. at Albaugh's Opera-House. General addresses by Drs. Flint and Semmola. Sections will meet at 11 A.M., and adjourn at the same hour with Congress at 1 P.M. In the afternoon the sections will meet from 3 to 6 P.M. In the evening it is expected that a reception will be given by the President of the United States, and the Corcoran Art-Gallery will be thrown open to the members and their families.

Third Day—Wednesday, September 7.—The Congress will meet at 10 A.M. General addresses until 1 P.M. The sections will meet as usual at 11 A.M., and adjourn at 1 P.M. Afternoon meeting of the sections from 3 to 6 P.M. Evening reception to the members and their families by the citizens of Washington.

Fourth Day—Thursday, September 8.—General meeting at 10 A.M. Addresses, if not previously delivered. Meeting of the sections at 11 A.M.; adjourn at 1 P.M. Afternoon, sections meet from 3 to 6 P.M. General reception buffet banquet at U. S. Pension Hall from 8 to 11 P.M.

Fifth Day—Friday, September 9.—General meeting at 10 A.M. Transaction of business affairs of Congress. Meeting of sections at 11 A.M., and adjourn at 1 P.M. Afternoon, sections meet from 3 to 6 P.M.

Sixth Day—Saturday, September 10.—General meeting at 10 A.M. Adjourn at 11 for visit to Mount Vernon.

On Sunday or Monday, the day not yet determined upon, an excursion train will leave Washington with the foreign members and their families for Niagara Falls, under the escort of a part of the Committee of Arrangements, selecting the route which will afford our foreign brethren an opportunity to see some of the most interesting and thrifty portions of our country, as well as very beautiful scenery.

In completing the details of this programme it may be necessary to make some slight modifications.

SUMMER DRINKS.

A continuance of fine weather and of warm sunshine, in spite of the rain upon St. Swithin's day, and occasionally since, implies a continuance of thirst as a necessary consequence of the free perspiration which is likely to attend all muscular movement. In England tropical heat is so rare that we cannot afford to dislocate all business engagements during the middle of the day, and we suffer accordingly; our ceaseless activity is followed by copious perspiration; this in turn by rapid evaporation and its ordinary risks; then, owing to the enormous drain of water from the system by the skin, the various secretions, more particularly those of the mucous and salivary glands, are diminished, and dryness of the mouth and thirst result. There is naturally great temptation to slake thirst whenever practicable, and to re-establish the balance of fluid in circulation. How this can best be effected becomes, therefore, a question of great importance at the present season. Many persons doubtless increase their discomfort by injudiciously drinking quantities of cold water, which serve to stimulate the sweat-glands, and so to increase the amount of loss by perspiration. While the "cold-water-cure" is to be deprecated, it should not be forgotten that it is equally, if not more foolish, to indulge freely in alcoholic stimulants. For the time they certainly allay thirst by stimulating the salivary glands, but after absorption they promote relaxation of the arterioles and increase the rapidity of the heart's action, and are hence followed by a speedy "Nemesis." The cooling influence of acids should be remembered in times of high temperature. The acid employed will necessarily be largely a matter of taste. Most persons would shrink from the use of dilute solutions of citric or tartaric acid, and yet many find relief from a beverage composed of diluted and unsweetened lemon juice. Should cider be found to agree with the digestion, a very pleasant summer drink may be compounded of equal parts of cider and of any pure form of effervescing water, the Hereford or rough cider being, as a rule, more palatable than the sweetened forms. Cold tea has many adherents, but it is worth noting that it should be poured out while still hot, and not allowed to stand to cool in contact with the leaves, since under these conditions the astringent properties become more completely dissolved, and the tea becomes less palatable and more likely to disorder digestion. Tea has, however, its disadvantages, the chief undoubtedly being the amount of wakefulness produced by it when

taken late at night. With regard to iced drinks, it should be borne in mind that the refreshing sense of coolness resulting from their employment in bulk is speedily followed by reaction. This is less felt when a cardiac tonic is employed in this form,—as, for example, the iced coffee so commonly provided at afternoon parties. "American drinks," also, are to be employed only in great moderation and with caution, being liable to induce catarrh of the stomach during the period of reaction following the primary chill. Of the so-called "temperance drinks" and of the more common lemonade and ginger-beer there is little to be said, provided that the purity of their source can be insured; it is, indeed, on this account that we would urge the employment of the more troublesome but infinitely safer home-made lemonade, prepared with boiling water, and rendered more agreeable by the subsequent addition of any pure effervescing water. Sugar should not be added in any quantity, as it evolves so much heat during oxidation. It is curious to note that the French, who, in hot weather, so carefully and wisely avoid alcohol, overlook this influence of sugar, and indulge freely in summer drinks of syrups and *eau sucrée*.—*The Lancet*, July 23, 1887.

THE DETECTION OF MORPHINE-TAKING.

DR. OSCAR JENNINGS recommends, in cases of suspected morphinomania, the examination of the urine for morphine or opium salts. He recommends the two following reagents:

First.—The double iodide of mercury and potassium (HgCl 13.546, KI 49.80, to a quart of water). This reagent gives a yellowish white precipitate with opium alkaloids.

Second.—The iodized iodide of potassium (I 10 parts, KI 20 parts, to 500 parts of water). With morphine salts this reagent gives a brown or yellowish precipitate.

If the quantity be too small to discover by one of these reagents, boil the urine to a third, treat with tartaric acid; then dissolve the tartrate of morphine thus formed with amyl alcohol; decompose the salt with ammonia, and if morphine be present, the solution should show a blue color on adding the perchloride of iron. A slightly less troublesome proceeding will detect meconic acid and prove the taking of opium; evaporate, wash with alcohol and boiling water, neutralize with magnesium carbonate, and treat, after filtration, with solution of iron perchloride. A blood-red color is characteristic of meconic acid.

MERCURIAL INJECTIONS.

A discussion has recently been taking place in the Brussels Medical and Scientific Society as to the relative advantages of mercurial injections and inunctions combined with internal medication. DR. THIRY prefers the latter method, as he thinks injections are attended with serious risks and inconveniences. M. ED. DE SMETH, on the other hand, practises injections largely—in fact, always—when mercury is indicated in syphilitic patients. At present there are in his wards twenty-four such cases in which no less than nine hundred injections have been given without any accident occurring; and M. de Smeth thinks that as, apart from his own practice, M. Martineau has reported a series of one hundred and eighty thousand injections without any accident, Lewin three hundred thousand with twenty abscesses, and Paikert five thousand without any, it cannot be said that this form of treatment is more liable to inconveniences than other forms. He points out that there is a great difference between injecting insoluble salts, as calomel and the yellow oxide, in the way recommended by Scarienzo, upon which method M. Thiry's experience of injections was mainly gained, and injecting soluble salts, which is the plan he himself prefers and follows. Here, he says, the only objection to the injections is that the patient must be regularly seen by the doctor, which in private practice is sometimes inconvenient. Of course care must be taken that the syringe is perfectly clean and that the liquid is well filtered. In order to illustrate the occasional importance of the rapid action which can only be obtained by the method of injecting soluble salts of mercury, M. de Smeth mentions a case of syphilitic laryngitis of so urgent a character that it was thought that laryngotomy would be needed. However, by means of hypodermic injections repeated five or six times during the course of twenty-four hours all danger was averted.—*The Lancet*, June 25, 1887.

DISCOVERY OF DIAMIDE.

A very interesting discovery has just come to us from Germany. The author, THEODOR CURTIUS, investigating diazoacetate of ethyl, found that by the action of potash a yellow crystalline compound was obtained, which, in its turn, was changed by sulphuric acid into white crystals, which proved to be the sulphate of the long-sought base diamide N_2H_4 . The important compounds called amides and

amines contain, as is well known, the radical NH_2 , formerly known as amidogen, which is the true analogue of hydroxyl, OH, and cyanogen, CN. This radical has at last been isolated, but, as in the case of the other normal radicals, the formula must be doubled, and the free compound is N_2H_4 or $NH_2.NH_2$. The base is easily obtained from its sulphate by the action of alkalies, and is a very interesting substance, about which we shall soon know more. It is a gas soluble in water, and fuming with hydrochloric acid. Its solution is a base, and turns red litmus to blue, and yet it is in smell and in other respects different from ammonia. It is a powerful reducing agent, readily reducing Fehling's solution and nitrate of silver. Its salts are suddenly decomposed by heat, and yield nitrogen when treated with nitrous acid, which last reaction shows their true amidic nature. The further study of this most interesting substance will be awaited eagerly by all chemists.—*The Lancet*, July 2, 1887.

A CONVENIENT FORMULA FOR NAPHTHALIN.

BOUCHARD suggests the following :

R Naphthalin, gr. lxxv;
Sacchar., gr. lxxv;
Essent. bergamot, gtt. ii.
Div. in chart. 20 in num.
Sig.—One powder every hour.

The drug may also be placed in gluten-capsules, each of which contains four grains.

The drug is an excellent antiseptic. It is generally very well borne, and may be given in quantities as great as from 50 to 75 grains daily. It has no effect upon the circulation, but is simply an intestinal antifermentative and germicide.—*Archives de Pharmacie*, No. 6, 1887.

OXALIC ACID IN ASTHMA.

Although a dangerous poison, oxalic acid seems to have proved very beneficial in the treatment of ten cases of asthma by DR. V. PAULET. He calls attention to the difference of action when the drug is given in a concentrated and when it is given in a diluted form. When administering the drug it is necessary to bear in mind the following considerations : 1. The dose should be in proportion to the weight of the body ; 2. Time of administration ; 3. The state of health or of the disease of the subject ; 4. The idiosyncrasy of the patient.—*National Druggist*, July 1, 1887.

— THE — Therapeutic Gazette.

Whole Series,
Vol. XI.

Detroit, September 15, 1887.

Third Series,
Vol. III. No. 9.

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Original Communications.

HYGIENIC THERAPEUTICS—A LECTURE ON MASSAGE.*

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GENTLEMEN,—I desire to devote two lectures to massotherapy, and I shall follow in these lectures the order which I adopted when treating of kinesitherapy. In the first lecture I shall give a historical survey of massage, and shall study its modes of application and its physiological effects, and

* An abstract of two lectures delivered in Cochlin Hospital, and translated from advance sheets by E. P. Hurd, M.D.

I shall devote the second lecture to its therapeutic uses.

The word *massotherapy* may appear to you somewhat strange, I fear even that it may seem uncouth, but it is sufficiently expressive of the meaning which I attach to it, namely, the application of massage to therapeutics. Moreover, writers have protested against the use of the word *massage* itself, and Dally rejects it altogether. He would have us give to the sum of therapeutical means included under this term the name of *manipulations*. But it seems to me idle to waste disputation over the grammatical validity of a word which is now in good medical usage, and I pass on to the consideration of my subject in its historical aspect.

On this part I shall be brief, for the history of massage is in many points inextricably blended with that of gymnastics, and if it behooved me to treat the latter subject with a fair measure of completeness, I have only to refer you to details in my first lecture, which equally concern massotherapy. There are, however, particulars in this history which deserve to be put in clear light, and to this task I shall now apply myself.

We find among almost all nations in the most remote periods of their history practices of massage in common usage. Review the writings of the principal navigators, consult in particular the narrative of Captain Cook, and you will see that in Tahiti, in New Holland, and other parts of Oceania, the primitive people employ the practices of massage for the treatment of diseases, and the means which they make use of are the same as those which we now employ. Thus, in the island of Tonga, in Oceania, under the name of "*toogi-toogi*," the natives have a medical practice which consists in prolonged and gentle percussion with the fist, and under the name of "*miti*," or "*fota*," they mean the kneading of muscles and frictions. In New Holland the same custom prevails, and it is chiefly the sorcerers, the *Mulgaradocks*, who practise these manœuvres of massage. Interrogate also the travellers of Central Africa, and they will tell you that among the inhabitants of the African continent the sorcerers practise the same pressures and the same rubbings.

Moreover, these rubbings and these pressures are, so to speak, instinctive, and whenever an individual suffers in any part of his body, he endeavors by these manœuvres to get rid of his pains. It is not surprising, then, that we find these methods in vogue from the very dawn of human history, and that we also see traces of them in the current medical practices of all nations, though modified according to climates and according to temperaments.

While in the East, where the cutaneous circulation is very active, and where there is a necessity for ridding the skin of all impurities resulting from the excessive performance of its excretory function, the most popular methods are gentle frictions, scratchings, kneadings, associated with vapor-baths, such as are put in usage in the Moorish or Hamman baths which are found in abundance throughout the entire East, among the people of the North, on the other hand, there is an indication to invigorate the circulation, to habituate the skin to undergo sudden transitions from

one temperature to another, and this is the benefit sought from vapor-baths, cold-water baths, and flagellations, such as characterize the Russian baths.

Moreover, we find in our own times "survivals" of primitive massage practices in the manœuvres resorted to by bone-setters. Before massage, as of late years, took a definite scientific character, these bone-setters were quite in repute as performers of massage, and it may be safely said that there is scarcely a populous locality, or even obscure hamlet, in France at the present day where some of these "natural bone-setters" do not exist to be a thorn in the flesh to the regular practitioner.

But while on this subject of massage from a purely scientific stand-point, it may be stated that in the Chinese book "*Cong-fou*," of which I spoke to you in the first lecture, we find an exact description of all the practices of massage. You will even find there an account of those concentric and excentric movements, which, according to Meding, constitute the basis of Swedish gymnastics. The engravings, moreover, which accompany the "*San-tsai-ton-houi*," show us how the Chinese practise massage.

In India, rubbings and percussions are also in popular usage, and Anquetil and Petit-Radel have insisted on this point. The Hindoos, besides making frictions with the mud of the Ganges, rub thoroughly and knead the muscles, an operation to which they have given the name of *chamboning*, which the English have translated *shampooing*, and which every barber knows how to apply so vigorously to the heads of his customers.

It can easily be shown that the Greeks and Romans were also in the habit of employing massage. Among a thousand equally pertinent examples I may cite this observation of Hippocrates: "At Elis the wife of a gardener was seized with a continuous fever; she took evacuant remedies without any relief. In the belly, below the umbilicus, there was a hard swelling, protruding above the level of the surrounding parts; this swelling caused violent pain. *The attendants were set to rubbing and kneading this tumor with all their might, their hands being well smeared with oil.* Soon blood in abundance was passed by stool. The patient experienced marked relief, and got well." Here, you see, was a case of intestinal obstruction, and massage overcame the obstruction and effected a cure. Oribasus, also, in his compilation, indicates all the practices of massage, giving the minutest details.

The RENAISSANCE, it must be admitted, added little to what the ancients knew respecting massage. I ought, however, to mention a curious tract by Paullini, which appeared about the end of the seventeenth century, and was entitled "*Flagellum Salutis*." The same subject was taken up a hundred years later (in 1795) by Meibomius, under the following head: "*On the utility of flagellation in medicine, in the pleasures of marriage, and in the functions pertaining to the loins and kidneys*." This title leaves no doubt as to the benefits which these two writers ascribed to flagellation in the treatment of certain affections, and in particular of frigidity.

As I have just told you, the practice of massage remained almost exclusively confined to the lower classes, being abandoned to the country quacks, and it is only within a few years that massage has obtained the right of domain in medicine. This movement of scientific renovation took place almost simultaneously in France, in Holland, and in Germany.

In France, in 1837, Martin represented to the Medical Society of Lyons the marvellous results which he had obtained from massage in the treatment of lame back and lumbago. Lebatard and Ellaume in 1860,* Rizet in 1862,† showed the advantages which may be obtained from massage in sprains; but we must come down to the thesis of Estradère in 1863‡ before we find a comprehensive treatise on the effect of massage. Works on this subject have since multiplied, and I cannot even give you a full list of their titles, but I cannot refrain from indicating the great value which I ascribe to the brilliant work of Estradère, who was the first to put in clear light the physiological effects of massage, and the therapeutic benefits to be derived therefrom. Nevertheless, it is not France alone that derived all the benefits of this work. Holland has reaped advantages from it under the influence of Mezger and his pupils, and we see even now patients flocking from all parts of Europe to Mezger's clinic to essay the effects of massage under the direction of that celebrated masseur.

Mezger has written but little. The only treatise of his which we possess (and it is of very modest dimensions) was published in

1868 at Amsterdam.§ He says in this work that it is his intention to devote himself particularly to those special applications of gymnastics which are called *frictions*, or, better still, *massage*. He adds that in 1853 he began at Amsterdam the treatment of sprains by this means; that little by little he improved his system, and that since 1861 he has occupied himself exclusively with massage. Mezger has gathered around him numerous pupils.

In Sweden, it is under the influence of Berghmann, of Helledag, and especially of Amström, that the method of Mezger has spread. In Russia, Berglind has been the pioneer in this direction.¶ Lastly, in France, we owe to Norström, of Stockholm, a complete exposition of Mezger's method.¶

In Germany, it is under the influence of Rosbach, of Busch, and particularly of Schreiber** and of Reibmayr, that massage has taken a truly scientific development. The work of Schreiber has been translated into French, and more recently still into English; Reibmayr's has been translated into French and annotated by one of my pupils, who has made a specialty of massage.††

The methods of massage are divided (like those of gymnastics) into two great groups,—massage without apparatus, and massage with apparatus. As for massage without apparatus, the only kind practised by Mezger and his followers, we have to distinguish four different manœuvres,—passes (*effleurage*), frictions, kneadings, and tappings.

Effleurage‡‡ consists in light passes made with the hand. Sometimes it is the palm which is used, sometimes the fingers, or, more properly speaking, the pulps of the fingers or thumbs, or even the phalangeal joints. In the latter instance the fist is closed, and it is with the extremity of the articulations of the phalanges with the phalanges that the skin of the patient is rubbed. The Germans give to this kind of massage the name of *kammgriff* (combing).

The frictions consist, as their name indicates, in making with the hands centripetal

§ Mezger, "De Behandling von Distorsio Pedis met Fricties." Amsterdam, 1868.

¶ Berglind, "On Massage." St. Petersburg, 1875.

¶ Norström, "Du Massage" ("Méthode de Mezger en Particulier"). Paris, 1884.

** Schreiber, "Practical Treatise on Massage and Medical Gymnastics." Paris, 1884; Philadelphia, 1887.

†† Leon Petit, "On Massage, after the Method of Reibmayr." Paris, 1885.

‡‡ *Effleurage*,—i.e., *grazing, the hand being made as it were to graze the part*.

* Lebatard, *Gas. des Hôp.*, 1850; Ellaume, *Gas. des Hôp.*, 1859.

† Rizet, "On the Treatment of Sprain by Massage." Paris, 1868.

‡ Estradère, "On Massage: its History, its Manipulations, its Therapeutic Effects" (*Thèse de Paris*, 1863).

frictions, which are rendered rhythmical by alternating the movements of the hands.

Kneading is performed sometimes by pinching up a muscle, or by kneading it with the two hands, or, in another manner, by rolling with both hands the muscles of a region.

Tapping movements consist in tapping, slapping, or stroking certain regions. Slapping is made with the palmar surface of the hand, the skin being smitten more or less forcibly. Stroking is done with the inner border of the hand, with which the part on which one wishes to operate is percussed with greater or less force.

The apparatuses employed in massage are quite numerous, and I can only mention the principal. Sometimes the instrument is a simple affair,—the flesh-brush or glove, the *strigilis* or flesh-scraper (*raclette*), which we find employed in remote antiquity, as is seen in one of the masterpieces of ancient statuary. Then come the more or less complex rollers (*roulettes*), with which of late years electricity has been conjoined, as in Butler's roller, Stein's cylinder. Then there are the wooden mallets, the ferules, the battledoors, whose number and whose form are variable, and whose application goes back to the most remote times. It is even probable that the old proverb, *Se battre les flancs*, etc. (*about beating the loins*), had an allusion originally to the custom of smiting the sides of the abdomen with a wooden paddle or a leather thong.

Among these latter instruments I must mention the percussor of Sarlandières, and the dorsal beater of Klemm, and the more complex muscle-percussor, which he has also recommended. I must also mention in passing the electric percussors, moved by electricity, and devised by Granville, which give an absolutely rhythmical series of percussions, and lastly, the more complicated apparatus which Zander has invented, and which also determines more or less prolonged percussions and strokes of considerable intensity.

These apparatuses, however, are mostly abandoned, at least in France, and even by Mezger in Holland, and it remains for me now to discuss the two following points: first, the utility of fatty inunctions in conjunction with the practice of massage; and, second, whether massage should be performed on the naked body, or through a certain amount of clothing.

Estradère, without attaching any great importance to ointments and inunctions, regards them, however, as having a certain utility. Schreiber, on the other hand, denies that

these inunctions are of any great benefit, and reserves them for special cases only. Mezger favors the use in nearly all cases of inunctions with some fatty substance, to which he would add some essential oil of agreeable odor.

I shall not reproduce here the many formulæ of ointments and pomades employed by the different medicasters. Every professional bone-setter has his particular formula, and, what is a little curious, it is not to the manœuvres which he practises, but to the ointment which he uses, that he attributes the effect obtained. This reminds me of a little incident in my own experience, when I was reporter on secret remedies to the Academy of Medicine. I had my attention called to a certain popular ointment, which was said to cure herniæ. But this is the way that the proprietor ordered it to be used: the hernia must first be rubbed with the ointment, then it was enjoined that a well-fitting truss, sufficient to support the hernia, should be worn after the rubbing. It is so with all these queer pomades which are in use by the different professional "rubbers,"—the inunction has no efficacy unless the accompanying massage is well performed. For my part, I believe that the use of some fat or oil is advantageous in facilitating the movements and passes (*glissements*) of the hand, and I am in the habit of employing vaseline aromatized with an essential oil.

As to the question whether massage should be practised on the denuded skin, Schreiber recommends its performance through a thin flannel wrapper, and, in support of this, appeals to considerations of propriety and modesty. I think, however, with almost all authorities who have had to do with this subject, that massage ought to be practised on the naked body.

We come now to the physiological effects determined by massage. These pertain to the functions of the skin and muscles, to the circulation, nervous system, to absorption, and nutrition.

As for the cutaneous functions, energetic frictions rid the skin of the debris of epidermis by which it is encumbered. The orifices of the sudoriparous and sebaceous glands are cleared, and this facilitates the more regular and thorough performance of the circulatory functions, and respiration of the skin.

The action on the muscles is quite as marked, and by kneadings or strokings of the muscles we arouse and augment their contractility. Strike with the inner border of your hand the triceps cruralis, or the biceps,

and you will see produced on the parts of the muscle thus stroked a peculiar hard swelling, which results from its limited contraction. In certain pathological cases, where the adynamia is profound, as in typhoid fever, this cord-like swelling persists a long time. We have here a fact which well shows the local action of massage on muscular contractility.

Massage acts not only on the deep circulation, but also on the circulation of the muscles and skin. It is by kneadings and pressures that we influence the deep circulation, while it is by slappings and flagellations that we promote a greater activity of the cutaneous circulation, and all you have to do is to stroke a part with the open palm repeatedly to obtain over the parts thus smitten a redness of considerable intensity.

This enhanced activity imparted to the circulation entails an augmentation in its local and general temperature.

As for the local temperature, Mosengeil estimates the heat-rise by massage at 2° and even 3° C. Berné* places it at even a higher figure, and affirms that the rise in the local temperature may attain 5° C. The average, according to him, is $1\frac{1}{4}^{\circ}$ C.

The action on the nervous system is two-fold, and this point claims our attention for a moment, for massage has been very much vaunted in the treatment of neuralgias. Massage, and, in particular, deep pressures and kneadings, produce traction and stretching of the nerve-filaments. Hégart† has endeavored to demonstrate experimentally the elongation of nerves under the influence of the manœuvres of massage, and particularly of movements of flexion of the vertebral column.

Another action of massage on the nervous system is more difficult of explanation. I refer to the strange nervous effects produced by light rubbing (*effleurement*) of the skin, and which are described by some writers under the name of *magnetic passes*. You will find in the recent work of Baréty‡ a description of the effects of these passes, which he calls *neurisation*. This quite special effect of certain practices of massage, although still badly understood, must, nevertheless, be taken into account in estimating the results

which are obtained from these movements in the treatment of certain affections of the nervous system.

But probably the most important action of massage is that which it exercises on the absorption of certain effusions, whether hemorrhagic or inflammatory. Numerous experiments in physiology have been undertaken to explain this resolvent action.

For instance, Mosengeil, in injecting into the knee-joints of hares solutions of Chinese ink, has shown that when the joint is treated by massage, the Chinese ink which has been injected into the joints diffuses itself through the neighboring parts, and that this phenomenon is the more marked the longer the massage is continued. Moreover, Reibmayr and Höfinger have shown that when liquid is injected into the peritoneum of a hare, it is absorbed with greater rapidity if massage is practised. The following table, which I borrow from these experimenters, shows this quite peculiar local action of massage :

Duration.	Liquid absorbed per kilogramme of the subject,		
	Without massage.	With massage.	Difference in favor of massage.
During the first hour....	0.457	0.905	+ 0.452
During the second hour.	0.283	0.120	— 0.163
End of second hour.....	0.740	1.029	+ 0.289

In Sweden and in Germany, as you are aware, it is taught that the living cell is situated in a liquid atmosphere, to which is given the name of *parenchymatous juice*. It is by acting on this parenchymatous juice and on the lymph-spaces that, according to Loven, we are to explain the resolvent action of massage in inflammatory and periarticular affections.

Lastly, massage has an undoubted action on nutrition. It has, in fact, been demonstrated that the quantity of urea in the urine augments under the influence of general massage.

Gopadze has even affirmed that the assimilation of azotized substances is rendered more active by massage. In a series of experiments made on four medical students who were subjected to a special dietary regimen, the nitrogen being estimated both in the aliments and in the dejections, a general massage of twenty-five minutes, made once a day, three hours after the principal meal, caused a diminution in the amount of azotized matters contained in the fæces. From this the experimenter concluded that the assimilation of azotized matters was augmented.

This increased activity imparted to the di-

* Berné, "Researches on the Modifications of the Local Temperature under the Influence of Massage" (*Société Medico-Pratique*, 1885).

† Hégart, *Wiener Med. Blätter*, 1884.

‡ Baréty, "Animal Magnetism studied under the Name of Neuric Force," etc. Paris, 1887.

gestive and assimilative functions by massage has also been affirmed by a young Russian physician, Chpolinski, who, in his inaugural thesis, published last year, "*On the Length of Time that Aliments ordinarily Sojourn in the Stomach*," has shown that the massage of the stomachal region, practised for ten minutes at a time, will diminish the length of the sojourn of food in the stomach.

The first case on which he experimented was that of a medical student, in whom a meal consisting of five hundred grammes of meat was five hours and twenty-five minutes in completely disappearing from the stomach. The days when massage was performed the duration of gastric digestion was only four hours and thirty minutes.

In another subject, where a meal composed of two eggs and a gramme of salt required three hours and fifteen minutes for its disappearance from the stomach, massage reduced this period to two hours and forty-five minutes.

As you see, gentlemen, massage notably promotes the gastric digestion, or at least the passage of alimentary substances from the stomach into the intestine.

One of my pupils, Dr. Hirschberg, has taken up this question anew by some experiments which he has made in my laboratory, which have confirmed the data established by Chpolinski.

Taking for his basis a peculiar property which salol possesses of undergoing decomposition into salicylic acid only in an alkaline medium, Ewald had shown that we can utilize this reaction to ascertain the duration of the sojourn of aliments in the stomach. All you have to do is to test the urine for salicylic acid in individuals to whom salol has been given along with food; the more tardy the appearance of this acid, the longer will be the sojourn of the food in the stomach. In employing this reagent, Hirschberg shows that massage hastens this transformation, and that while in the ordinary state it takes two hours for salicylic acid to appear in the urine, forty minutes suffice after an abdominal massage.

These experiments have, moreover, brought to view a fact which physiologists who have taken up the subject of massage have touched lightly, and which at the same time seems to me to have capital importance in these applications of massotherapy: I refer to the augmentation of diuresis under the influence of abdominal massage. All our patients on whom abdominal massage has been practised have testified to a notable augmentation in the

urine, which sometimes amounts to double the normal quantity, and this is an important point, to which I propose to return when we come to study the indications for massotherapy.

Now that you know the manœuvres of massage (which, in fact, are not at all difficult), and the physiological effects which may be expected therefrom, we may profitably take up the study of the therapeutic applications of massage.

II.

APPLICATIONS OF MASSOTHERAPY.

The applications of massage to therapeutics are numerous. We will, if you please, consider them under several heads, and will successively speak of massage in its applications to obstetrics, gynæcology, surgery, and medicine.

1. The use of massage in obstetrics dates back from the most ancient times. Among all primitive peoples we find massage employed in the practice of midwifery. If you will refer to works written on the obstetrics of different nations (as for instance the familiar treatise of Corre), you will see that almost all the odd methods put in usage are only various forms of massage.

By massage four results are obtained,—(a) the contractions of the uterus are excited; (b) vicious positions are rectified; (c) the placenta is delivered by the process called *expression* (Credé's method); (d) hemorrhages are arrested. To-day all these manœuvres are well known, and give, as you know, excellent results.

Massage of the gravid uterus is made by circular passes over the abdomen. Under some circumstances bimanual massage is of great utility,—i.e., one hand is introduced into the uterine cavity, while the other endeavors by abdominal frictions to excite uterine contractions. This latter manœuvre is principally put in usage in cases of post-partum hemorrhages.

2. In gynæcology it is Norström who has shown himself the most ardent inculcator of massage, which one of his fellow-countrymen, Thure Brandt, a man who, by the way, had no knowledge of medicine, was the first to suggest for the cure of uterine affections. The practice of the Swedish empiric dates from 1868. Thure Brandt recommends three processes of massage, one of which he calls *external massage*, and which consists in rubbing and kneading the abdominal parietes, through which the operator seeks to plunge

his fingers deeply, and, if possible, into the pelvic cavity.

The other process is called *mixed massage*. The patient is placed on her back, and the masseur, taking his position at her left, compresses the uterus with the right hand upon the index and middle finger of the left hand introduced into the vagina; in certain cases, even, the fingers are introduced into the rectum. But the process to which Thure Brandt gives the preference is that which he calls *combined massage*, and which I shall rather call *massage with four hands*; and this is the way that this strange method is put in practice, demanding, as it does, two operators:

One of the masseurs, taking his position between the legs of the patient, introduces the fingers of the left hand into the vagina and raises the uterus, while, with the right hand placed under the hips, he kneads the sacro-lumbalis muscles. The other masseur operates on the abdominal parietes, and associating and giving a rhythmical character to their manœuvres, the two practitioners devote themselves to rubbings, tractions, and kneadings of all sorts.

One cannot too strongly condemn such practices, and my pupil, Dr. Leon Petit, in his communication on "Massage of the Uterus," made to the Society of Practical Medicine,* has well shown how useless and how dangerous are such manœuvres, which belong rather to the domain of onanism than to that of therapeutics. So, notwithstanding the facts cited by the advocates of uterine massage, and in particular by Reeves Jackson, of New York, and Norström, of Paris, I pray you never to employ such methods.

Besides all the moral drawbacks which result from this handling and rubbing of the genital parts, and of which I need say no more, there is a rule which is imperative in almost all uterine affections, viz., rest of the organ is indispensable. My master, Bernutz, has justly insisted on this fact, that in most uterine maladies it is rest of the organ and function which brings about the cure, and it is a violation of this rule to introduce the hand into the vagina, and thereby exercise pressures or frictions, which, however light they may be, tend to excite and congest the genitals. Therefore, notwithstanding the sixteen favorable observations recently published

by Paul Profanter,† where massage applied to the treatment of displacements and of prolapsus, as well as of uterine and periuterine engorgements, has resulted in cure, I persist in believing that this method has more of evil than of advantage in the treatment of these affections, and I pass now to the application of massage to surgery.

3. I shall be brief on these surgical applications, and shall concern myself particularly with the treatment of sprains by massage. I ought to remind you, however, that massage, heretofore reserved in surgery for the joint-diseases, has been applied the last few years to the treatment of fractures, and this has been done under the influence of Schode of Hamburg, of Menzel of Trieste, of Mezger and Tilanus of Amsterdam, and especially of Lucas-Championnière, who, in July, 1866, communicated to the Society of Surgery the successful results which had been obtained in fractures by massage. Berne, who was one of the first in France to recommend massage in the treatment of fractures, and whose writings are even anterior to those of Lucas-Championnière, considers fractures of the radius and of the fibula at their lower extremities, also those of the elbow and patella, as especially tributary to this method. He regards the application of a splint which can be easily removed at the moment of massage, as more useful than any permanent fixture, because presenting no impediment to the prompt return of the functions of the joint.‡

Quite recently, moreover, Prof. Masse of Bordeaux§ has taken up the subject again, and pointed out all the benefits derivable from massotherapy in counteracting the disastrous effects of immobilization as imposed by the retentive apparatuses hitherto applied in these cases.

The treatment of **SPRAINS** by massage has been attended with excellent results. First practised by the bone-setters, gray nuns, "sprain-blowers" (*souffleurs d'entorses*), etc., massage is to-day employed in the treatment of sprain by all surgeons, and the works of Ellaume, of Lebatard, of Mervy, of Estradère, of Rizet, etc., show us the importance of this method.

† Paul Profanter, "On Massage in Gynæcology" (*Wien.*, 1887).

‡ Berne, "On the Technics of the Treatment of Fractures by Massage" (*Revue Gen. de Clin. et de Thér.*, June, 1887).

§ Masse, "On the Treatment of Fractures by Massage" (*Gaz. Hebdom. des Soc. Méd. de Bordeaux*, July 3, 1887).

* Leon Petit, "On Massage of the Uterus in Obstetrics and Gynæcology" (*Journal de Médecine de Paris*, May 16, 1886).

All cases of sprain, simple or complicated, except, of course, those where there exists a fracture of the joints (and we have seen that even this is not now regarded as a contra-indication), are tributary to massage. The beneficial effects are the more speedy and the more certain the sooner massage is applied after the accident, and you will often see patients who at first could not stand on their feet get up and walk, and even return to their homes on foot, after their first séance of massage.

But it is necessary to be exact in the diagnosis, and this it is that explains the reason of the successes and the failures of the bone-setters, who apply massage to all the traumatisms of the joints, whether these pertain to sprain or to white swelling. In the case of sprain, marvellous results are easily obtained, while in white swelling only disastrous consequences would ensue from massage.

You ought, then, gentlemen, to understand well all the manœuvres of massage in sprains. All that have been counselled thus far may be summed up in three processes,—those of Lebatard, of Gerard, and of Magne.

In the process of Lebatard, the masseur seizes the heel of the extremity which is the seat of the sprain with the palm of the opposite hand; then he makes with the foot a seesaw motion back and forth, while exercising a strong traction on the tendo-Achillis. In this manipulation the thumb is made to grasp as far as possible the tibio-tarsal swelling, while the endeavor is made to force behind the external malleolus all the swollen parts. The opposite hand executes similar movements over the internal malleolus; then, when the malleoli have recovered their natural form, the fingers seek by pressures over the tendo-Achillis to free that tendon.

Gerard's method is less harsh than that of Lebatard. It consists in light rubbings (*effleuréments*) with the tips of the fingers. After ten or fifteen minutes the operator passes to the second stage, which comprehends a kneading of the peri-malleolar parts; this is made from below upward, from the tips of the toes to the upper third of the tibia. Then the massage is completed by a few flexions and extensions of the joint.

Magne's process, adopted by Estradère, is intermediary between the other two. The operator commences by frictions, the intensity of which is gradually augmented. At the end of thirty or forty minutes, he exercises the joint after the manner of Lebatard, then he finishes by a massage of fifteen or

twenty minutes. The total duration of the operation is nearly two hours.

As you see, gentlemen, the massage of sprains is very simple, demanding of the physician first an accurate diagnosis, then energy, then patience.

Busch, who in Ziemssen's Hand-book has given a good monograph on massage, considers that in sprains these manipulations fulfil the three following ends: First, they restore the parts to their natural situation, and in this connection he refers to the practice of one of our surgeons, Ravaton, who, in cases of sprain, has two stout men pull apart the articular surfaces, while the hands of the surgeon are clasped tightly around the joint thus stretched. The second effect of massage is to lessen and abate the muscular spasm which always accompanies the articular distortion. Here kneadings of the muscles act the most effectually in antagonizing this spasmodic state. The third result obtained by massage consists in the disappearance of the blood-effusion which attends sprains; the absorption and removal of this effusion is promoted by the rubbings, which are made from the extremity of the member to its base.

As for the results thus far gained, statistics are most favorable, and in those which have been published by Mullier and Moller, it appears that while immobilization and ice will bring about the cure of a sprain in an average of twenty-five days, massage well performed will accomplish this result in an average of nine days.

In the Prussian army, where massage is obligatory in a certain number of affections, and, in particular, in sprains, the military surgeons, in their half-yearly reports, do not fail to communicate the results obtained by this method. By referring to the reports of Starke, Gassner, Brurberger, Gerst, and Korner, you will see that the average duration of the disability entailed by sprains, where massage has not been employed, is 27.3 days, and where massage has been used 8.9 days, so that you see there is a difference of 14.8 days in favor of the treatment of sprains by massage. It is to be wished that the same practice might be obligatory on the military surgeons of our army. I ought here to remark, however, that my friend and colleague, Marc Sée, considers compression made with an elastic bandage, in the case of sprains, superior in its results to massage.*

* Marc Sée, "On Sprain and its Treatment." Paris, 1884.

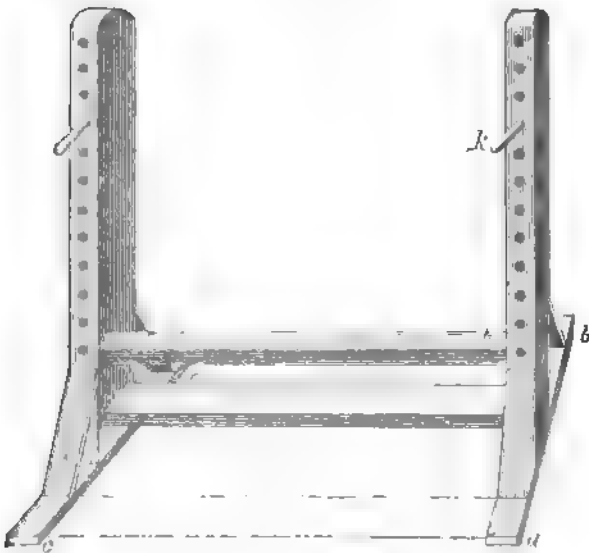
4. I come now to the medical applications of massage. These are very numerous, and we will, if you please, divide them into several groups. I will speak, first, of massage in the treatment of pain, then in articular and muscular affections, then in neuroses, and, lastly, in certain visceral affections.

As I have before told you, it is by an instinctive movement that man seeks to relieve pain by frictions, and I have often seen patients in the agonies of *tic douloureux* rub the skin till abrasion and bleeding were produced. Experts have given regularity and system to these practices, and what I have to say on this head shall pertain particularly to sciatica and migraine.

It is Schreiber* who has given us the most precise rules as to the treatment of sciatica by massage. The treatment of sciatica, according to Schreiber, consists in massage, the application of certain apparatuses, and in passive movements.

The apparatus consists of a frame, of a mechanical bed, and of several short joists.

FIG. 1.



The frame is a very simple affair, and is composed of two uprights pierced with holes, which enable one to elevate to variable heights a horizontal bar (*g, h*). (See Fig. 1.) As for the mechanical bed (Fig. 2), it is also of Schreiber's invention, and is of simple construction. It is composed, as you see, of different segments, which are raised or lowered at will by means of ratchets. The patient is placed on the bed, as is shown in Fig. 3. As for the joists, they are one metre long,

six centimetres thick, and twelve centimetres wide.

This is the way these means are utilized, along with massage, in the treatment of sciatica. I shall not follow Schreiber in the enumeration of all the manoeuvres, day by day up to the thirty-second day, which are prescribed by that authority, but shall only give a rapid sketch of his method.

The first day the patient is placed before the frame, and the horizontal wooden bar being placed as low as possible in the two uprights, by adjusting the pins (*k*), the patient is directed to extend the foot of the affected limb upon the transverse bar, holding on to the two uprights by his hands. This manoeuvre is repeated ten times.

Then the patient is placed on the mechanical bed, as is seen in Fig. 3, and passive movements are executed, which consist in flexing the thighs on the body and elevating the leg on the thigh; these movements are repeated twenty times. Lastly, a gentle massage is practised, which consists the first day in simple light rubbings over the painful points.

The second day these manoeuvres are repeated, especial attention being given to massage, and kneading of the muscles is then begun. Passive movements also are performed; the thigh is moved back and forth from the middle line.

Then the following days the movements are progressively increased, and the horizontal bar of the frame is gradually raised by putting it into the higher sockets, so that the patient is obliged every day to attain with the foot a greater height.

At the end of the first week the exercises with the little posts are commenced. These are placed on the ground at regular intervals (like nine-pins), and the patient is made to walk between them without hitting them with his feet.

Lastly, the passive movements are performed by rotating the affected thigh in its joint.

Such is the mechanotherapy and the massotherapy treatment of Schreiber. It is, as you see, somewhat complicated and lengthy, and is only applicable to cases of sciatica which are stubborn,—i.e., to those which have resisted punctiform cauterizations and the methyl spray. In such cases as these I cannot too much recommend Schreiber's method.

This practice of massage is applicable to all the other neuralgias, but the manoeuvres are variable, according to the seat of pain, and among these painful affections I must

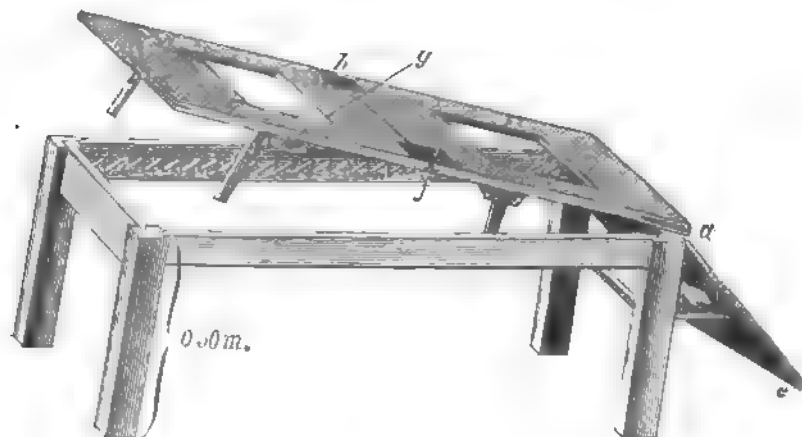
* See his book on "Massage," recently published by Lea, Philadelphia.

point out to you in particular the good effects of massage in the treatment of migraine. Here it is principally the muscles of the head which are treated by massage, which is performed with the pulps of the fingers; this is the *pulpation* of Laisné, which consists of a series of taps made over different points of

arthritis, periarticular engorgements, chronic synovitis, chronic rheumatism under all its forms, are tributary to treatment by massage.

It is well understood that massotherapy must not be employed till at an advanced period of the disease, when all the acute inflammatory symptoms have subsided. Danger-

FIG. 2.

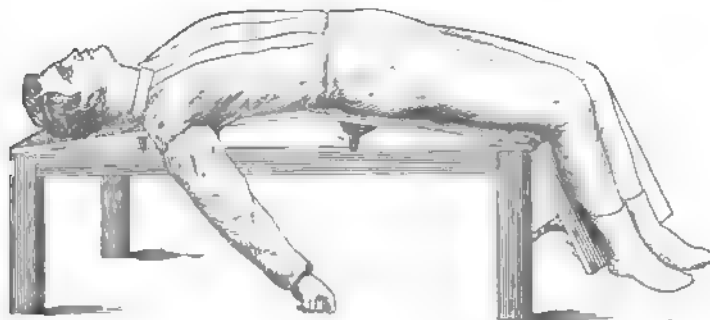


the head, just as if one was playing on a piano. A certain dexterity is required in executing this manoeuvre, which, if we may trust the trials made by Romberg, by Dubois-Reymond, and especially by Dr. Weiss, gives excellent results.

Lucas Pardington has, moreover, quite recently taken up the subject of treatment of migraine by massage, and he has reported a case of a man, 26 years of age, suffering from hemicrania of grave form and rebellious to all the means of treatment, which was

ous as it is to practise massage on a joint which is the seat of an intense acute inflammation, there is no disputing the advantage which such massage can confer on joints when the acute symptoms have disappeared, and you can see at any time in our hospital wards the remarkable results obtained from massage by our clinical assistant, M^{lle}. Chappat, in the treatment of the sequelæ of rheumatism, generally so long and painful. Here the action of massage is twofold. It not only restores movement to the joint, but it promotes reso-

FIG. 3.



cured in three days by séances of massage of twenty minutes' duration made over all points of the head and neck which were affected.*

As for the articular affections, it may be affirmed that all kinds of stiff joints, chronic

lution and disappearance of engorgements and periarticular adhesions.

The manipulations vary according to the joints affected, but all have this end,—gradually to restore the movements of the joint on the one hand, and the natural form of the joint on the other.

It is the same with the muscular affections,

* Pardington, "On the Treatment of Migraine by Massage" (*The Practitioner*, 1887).

—atrophy and contracture. In these cases massage is superior to gymnastics.

In his interesting monograph on massage, William Murrell calls particular attention to the benefits which may be derived from massage in infantile paralysis, locomotor ataxia, and in writer's cramp.

Wolf, of Frankfort-on-the-Main, was the first to lay down the rules of treatment of writer's cramp by massage. Wolf is not a physician, but a professor of gymnastics. The method which he urges consists of massage and gymnastic manœuvres. His favorite massage movements are principally frictions and digital taps. The gymnastics which he advises are both active and passive, the former consisting in sudden movements, which the patients execute with the hands, which are now opened and now shut, and which are kept up for half an hour; these exercises are repeated three times a day. The passive movements consist in the forced distention, or rather elongation, of the muscles of the fore-arm. This elongation is done by the patient himself, who repeats it three or four hundred times a day. If we may believe Romain Vigouroux,* this treatment causes writer's cramp to disappear in a fortnight.

I will add that for the symptom cramp, whatever may be its cause, massage is a sovereign remedy, and you should here employ principally kneading of the muscles and the strokes or taps (*tapotement*).

Paralysis agitans is also believed to be amenable to treatment by massage, and Berbès has recently reported to the Society of Therapeutics the favorable results which he has obtained by this means in a case of Parkinson's disease.†

As for the neuroses, I shall not repeat what I have said *à propos* of the treatment of chorea by gymnastics, where, in truth, massage is oftener employed than gymnastics properly so called, but I must call your especial attention to massage in hysteria, because serving as the basis of a kind of treatment of this disease which has become very popular of late years under the name of S. Weir Mitchell's method. This mode of treatment is complex, and demands for its execution the isolation of the patient, absolute repose, and the employment of massage and electricity.

Dr. S. Weir Mitchell begins by completely

isolating his hysterical patients from their family and usual surroundings, and putting them under the care of a trained nurse, who never leaves them; then he subjects them to absolute repose and a special diet system, of which milk and eggs form the basis. Then he insists on the application of general massage, and sometimes of electricity, which plays, however, but a secondary rôle in the treatment, as the movements produced thereby only serve to combat the disastrous effects of immobility. This treatment has had but few advocates in France, and it is hardly applicable except to extreme cases of hysteria. Nothing shows that it is superior to the treatment which we employ in such cases,—isolation, hydrotherapy, and exercise in the open air. I shall, however, return to all these points in one of my future lectures on hydrotherapy.

It remains for me to say a few words concerning massage in general affections. In diseases of the heart, massage will render you service in combating œdema, and the same may be said of œdema due to renal affections; and I remember to have seen a remarkable example of this. The patient was the wife of a medical *confrère*, who was suffering from albuminous nephritis, with considerable anasarca of the lower limbs, which doomed her to absolute rest. Massage removed the œdema, which did not return, although the quantity of albumen in the urine remained unchanged.

Here the effects of massage are twofold. It acts, first of all, locally, and favors the resorption of effused liquids; then it has a general action, promoting nutrition, augmenting the excretion of urea, and thus combating one of the effects of chronic alterations of the kidneys.

Furthermore, I showed you, while speaking of the physiological action of massage, that the practice of abdominal massage notably augments the excretion of urine. This is an effect which ought to be taken account of in explaining the favorable effects of massage in cardiac and renal affections.

Lastly, in abdominal affections, constipation, and dilatation of the stomach, massage has been found to give excellent results. When, in fact, you study the physiological observations of Chpolianski and of Gopadze, you see that by massage the assimilative functions of the digestive tube are promoted, and the passage of the alimentary bolus is favored. Clinical observations give support to the facts testified to by physiology.

As for constipation, everybody is agreed in

* Romain Vigouroux, "On the Treatment of Writer's Cramp by Wolf's Method" (*Progrès Médical*, January 21, 1882).

† Berbès, Soc. de Thé., Session June 8, 1887.

acknowledging the good results obtained by massage. Berne,* who has so urged the importance of abdominal massage, recommends the following mode of procedure: After having kneaded the abdominal teguments, then the abdominal muscles, the operator makes gentle pressure over the cæcal region with the palmar extremities of the last four fingers; then, with the closed fists, he performs massage over the whole extent of the colon. Berne insists that this massage shall be both very gentle and very deep. He recommends, moreover, that the patient should be made to urinate before massage, and that careful examination should be made to see if there be any tumors in the abdomen, or any calculus in the gall-bladder. The length of each séance should be fifteen or twenty minutes. Besides insisting on the mechanical action of massage, Berne makes great account of the property which these exercises possess in promoting the secretion of bile. Hence he advises to associate with the above-mentioned manœuvres gentle pressures over the gall-bladder.

As for the application of massage to the affections of the stomach, and in particular to dilatation of the stomach, massage in these cases gives excellent results. For more than a month past you have seen in our hospital wards Dr. Hirschberg practise massage on the greater part of our patients who are suffering from dilatation of the stomach. You have been enabled to witness the marked benefits which these patients have derived therefrom; their digestion is improved, their weight is augmented, the *clapement* and all the distressing symptoms are alleviated. It is, then, a practice which you ought to resort to in such cases.

Such are, rapidly summarized, the hints that I wish to give you respecting massage. I believe that these suggestions will be of value to you, and that you will be able to turn them to account in your future practice. For my part I have never ceased to felicitate myself on the use which I have made of massage.

In the next lecture we will undertake the study of one of the most powerful agents of hygienic therapeutics, often put in practice along with gymnastics and massotherapy: I refer to hydrotherapy.

* Berne, "Treatment of Constipation by Massage." Paris, 1887.

DITANA DIGITIFOLIA.

By H. H. RUSBY, M.D., DETROIT, MICH.

WE are told that in 1870 Prof. Westore Giurleo received from a friend, an Italian chemist, then residing in Mexico, the flowers of a plant whose habitat was said to be Virginia. On account of the peculiar construction of the leaf the plant was called *Ditana digitifolia*. Experiment with the drug, with reference to its therapeutic value, disclosed the fact that it possessed valuable galactagogue properties, as by its internal "application" the secretion of the milk could be perceptibly increased. Thorough investigation could not be made on account of the scarcity of material at hand. Prof. Giurleo, however, read a paper on the subject of this plant and its properties, under the name of *Ditana digitifolia*, before the Italian Medical Congress of Perugia, by which means he succeeded in getting the drug before the reputable physicians of Europe, and secured notices in the medical press, the name *Ditana digitifolia* always being used. An abstract of his paper was printed in *Il Morgagni*, parte 11, 44, 1885. This article afterwards reappeared in the *Deutsche Medicinal Zeitung*, and was from time to time noticed in many other journals. In this country it was briefly referred to in the THERAPEUTIC GAZETTE, *The Chicago Med. News*, and the *N. Y. Med. Journal*. The *Med. News* says, "The professor has apparently been misled, as no one but himself has been able to find the plant." The *Med. Journal* considers that *Ditana digitifolia* is a synonyme for *Rhamnus alaternus* L.

Mr. Thomas Christy desiring to obtain supplies of the drug, wrote to his agent in Mexico, enclosing a drawing of the plant, copied from an advertisement of a patent medicine claiming to be made therefrom. His agent replied that he had been unable to obtain any information in regard to it, but that, judging from the drawing, it belonged in the family Onagraceæ, the flowers having the form of *Zauschneria*. Mr. Christy then applied directly to Giurleo, but his communication was unnoticed. Messrs. Parke, Davis & Co., taking the investigation in hand, after vainly exhausting every other source of possible information, wrote to Prof. Giurleo, urging that he should satisfy the growing inquiry regarding this name. In reply they received a supply of quack advertisements, with a label printed in four languages, in which Giurleo sets forth that the remarkable remedy "Ga-

lattoforo," "invented by him," is already recommended by all the leading therapeutists, and "all people," he says, "ask it above all for its perfection, good taste, and prodigious virtue." He then furnishes popular directions for its use, appeals to the public to purchase directly from himself, "the inventor," and concludes by stating that orders unaccompanied by cash are worthless, an announcement which appears to be quite necessary in the Mediterranean countries. Accompanying is a little pamphlet for public distribution filled with popular testimonials. As a frontispiece we have a picture of a fond mother viewing her children playing in the shade of the wonderful plant, whose single terminal flower appears to be more than eighteen inches in length,—looks like a gigantic fuchsia. On page 4 is a second cut of the plant, which differs considerably from that in the frontispiece, having apparently been constructed to indicate how much more like a kid glove the "inventor" could have made the leaves than nature has done.

Such is the information that we have been able to secure concerning *Ditana digitifolia* and its proprietary product Galattoforo. From it we deduce the following conclusions:

1. *Ditana digitifolia* means nothing. It is not a botanical name, as it has never been accompanied by any description, and the originator has even been ashamed to append his name as authority. It will never be admitted into any botanical work. The *Medical Journal* is in error in supposing it to be a synonyme for *Rhamnus alaternus* L., as the little that has been published rather contrasts the two plants as being antagonistic in their action.

2. The plant represented by Prof. Giurleo under this name is a botanical impossibility. Its leaves exclude it from the family Onagraceæ; but, aside from this, the whole figure is a monstrosity, and that on page 4 of the pamphlet carries on its face the evidence of fraud, in the manner in which it has been doctored, to produce a sensational effect.

3. Further evidences of fraud are found in the attempt to mislead the public into the belief that the plant is unknown, or has no other name than the fanciful one above referred to. The eighteen years during which the professor has been receiving supplies for the manufacture of his quack medicine has afforded ample opportunities for securing material for botanical identification if it were a known plant. If, on the contrary, it were unknown, it should

have been referred to some competent botanist for classification and publication. Under the circumstances, we are perfectly justified in assuming that the whole thing is scientifically a swindle from beginning to end, and that the origin of Galattoforo may as well be a door-yard weed from the vicinity of Rome as some mysterious plant from Mexico.

Lastly, and what is of the greatest importance for us to consider, there is no doubt that numbers of sincere people, especially in Europe, have been deceived and misled by this man, who appears to have enjoyed heretofore some degree of reputation. Their error has been that of accepting a name unaccompanied by its authority. It is a cardinal rule among botanists to append the name of the author of a species in every case where the name is written, unless it may occur several times in the course of a single article. This rule has not been generally recognized by the medical press, particularly in the United States. In just so far as they have failed to do so they have been unscientific, and in a most important particular, for it is certain that in a large majority of cases such errors and deceptions creep in through a failure to observe this judicious regulation. If Prof. Giurleo does not wish to be ranked among charlatans he must tell us the truth about *Ditana digitifolia*.

OXYGEN ENEMATA.

By J. H. KELLOGG, M.D., BATTLE CREEK, MICH.

SOME weeks ago, while employing the carbon-dioxide and sulphuretted hydrogen enemata, it occurred to me that oxygen gas might be employed advantageously in the same manner. Having at that time under treatment a case of lithiasis, I resolved to make a trial of the administration of oxygen by enema, in the hope that by the introduction of oxygen directly into the portal circulation the conversion of uric acid into urea might be aided, and my patient thereby relieved. I was at first deterred from the attempt by the supposition that oxygen would probably give pain, as it has been claimed that the pain sometimes occasioned in the employment of sulphuretted hydrogen by the Bergeon method is produced by the accidental injection of small quantities of atmospheric air. I determined, however, to try the experiment, and made the first injec-

tion of two litres of pure oxygen gas on June 20. At this time the patient, a man of 28 years, was passing very great quantities of uric acid daily, a large quantity of crystals being thrown down from every specimen of urine passed. The symptom had persisted most stubbornly for weeks in spite of the enforcement of a non-nitrogenous diet, the patient also taking by direction from three to five pints of hot water daily. The beneficial effect of either regimen or treatment was so slight as to be scarcely perceptible. Two litres of oxygen were administered regularly each day about 10 A.M. At the end of three days the excess of uric acid disappeared entirely from the urine, and has appeared only twice since, and then in small quantity, when the injection had been discontinued for a day or two. At the beginning of treatment the patient's skin was very muddy, sclerotics dingy, tongue coated, and he complained of a constant and very annoying brassy taste in the mouth and distressing headache. The brassy taste and headache both disappeared very soon after the injections were begun, and there has been a steady improvement in every other particular. The coat has disappeared from the tongue, the skin and sclerotics have become nearly normal in appearance, and the patient has gained several pounds in weight, though before he had been constantly losing weight for some weeks, and seems to be in every respect improved. The patient, a very intelligent gentleman, attributes his improvement almost wholly to the employment of the oxygen, as the measures which had been previously employed had had little or no favorable influence upon his condition, and no change in regimen or treatment has been made with the exception of the administration of the oxygen. It seems to the writer that there may be a large field of usefulness for oxygen employed after this method. The advantages of the employment of oxygen by enema, as compared with the inhalation of oxygen, are very great.

1. In the inhalation of oxygen only a very small portion of the gas inhaled can be used, the greater part being wasted, as experiment has shown that not more than one-fourth of the oxygen contained in the air is extracted by the lungs during the passage of the air through them in ordinary respiration, and that a very much smaller proportion is absorbed when the quantity of air passing through the lungs is increased, as in deep breathing. Hence, in order to get into the system any considerable quantity of oxygen,

it is necessary for a person to inhale a very large amount, making the treatment very expensive.

2. Experiments which have been made for the purpose of testing the therapeutic value of oxygen inhalations have shown that the proportion of oxygen absorbed by the lungs is not proportionally increased by the increase of the percentage of oxygen in the respired air. Indeed, the reported results of careful experiments show that very little more oxygen was actually received by the system when breathing pure oxygen than in the breathing of ordinary atmospheric air. When oxygen is introduced into the alimentary canal the entire quantity introduced is absorbed, and thus utilized, making it possible to introduce a known quantity of oxygen into the system, and in a manner which leaves no room for doubt that it has been received and appropriated.

3. In cases in which it may be considered desirable that a considerable quantity of oxygen should be introduced into the system for the purpose of encouraging the oxidation processes by which effete matters are disintegrated and prepared for alimentation, especially those which are acted upon by the liver, the oxygen enema offers a means by which the gas can be applied where it is most needed. Oxygen received by the lungs passes at once to the left side of the heart, and thence through the arterial system to the entire body, so that the liver receives no more than its due proportion of the gas. Consequently, a very considerable increase in the quantity of oxygen absorbed through the lungs would scarcely increase to an appreciable degree the amount of oxygen available for use by the liver. This fact is made particularly conspicuous when we reflect that the chief source of blood-supply to the liver is the portal circulation. It is apparent, however, that when oxygen is introduced into the lower part of the alimentary canal, it is at once received through the venous absorbents into the portal circulation, through which it is conveyed directly to the liver, precisely where it is needed, thus making the entire amount of oxygen administered available for the purpose for which it is administered. Is it not, then, apparent that this method of administering oxygen possesses, for cases of the sort referred to, an immense advantage over its use by inhalation?

4. The process of digestion is, from a chemical stand-point, chiefly a process of hydration and oxidation. The experiments

of Dujardin-Beaumetz, performed some time ago, showed that the drinking of oxygenated water exerts a very beneficial effect upon the digestive process in persons suffering with slow digestion. (I have not seen any extended account of experiments of Dujardin-Beaumetz; I have simply seen in medical literature a mention of the fact stated.) May it not be true that, in some cases at least, the difficulty under which the digestive organs labor is a lack of a sufficient supply of oxygen in the blood, or, at any rate, that the introduction of oxygen into the portal circulation by oxygen enemata may be found to facilitate the digestive process? It is very easy to make a practical test of the matter, and I am now engaged in a series of experiments in the use of oxygen in various forms of dyspepsia, the results of which I shall report at some future time.

5. It seems to me that oxygen enemata may be employed advantageously in a great variety of cases; in fact, in all cases in which there is such a disturbance of the normal interchange of gases in the lungs as deprives the system of its proper amount of oxygen. The mucous membrane of the intestines presents an absorbing surface; very small, it is true, when compared with the amount of surface presented to the air in the lungs, and yet it is sufficiently great to allow of the introduction into the system of a large amount of oxygen in addition to that which can be gotten in through the lungs; and this additional quantity, though small when compared with the total amount received by the lungs, may be of sufficient value to the system to be of immense advantage to it, especially on account of its introduction at this particular point in the circulation. The notable functional disturbances of the stomach which accompany various pulmonary disorders, such as emphysema, chronic bronchial catarrh, chronic pleurisy, pneumothorax, etc., suggest a very important relation between the digestive function and the quantity of oxygen received through the lungs. The same relation is also suggested by the frequency with which dyspepsia occurs among sedentary persons, who are habitually air-starved in consequence of deficient muscular activity. Oxygen enemata may prove a valuable remedy in cases of this sort, as well as in others in which an additional supply of oxygen is needed.

I have carefully questioned patients respecting the retention of the oxygen injected, and have found that it has always been retained without difficulty, and does not pass

off as flatus from the bowels or eructations from the stomach. This fact offers good evidence of its absorption, but to determine the fact beyond the possibility of question, I made on July 20 an experiment on a guinea-pig. After placing the animal under chloroform, the abdomen was opened, and the intestines drawn out and spread out in such a way that the dark portal veins were in full view. A quantity of gas was then injected into the rectum, and to my great satisfaction I found that the dark venous blood assumed a bright red hue almost equal to that of arterial blood within less than one minute after the injection of the gas, showing the rapidity with which the absorption of the oxygen takes place. To confirm the result, I allowed the oxygen to escape from the bowels, afterwards replacing it, and repeating the experiment several times. In each instance the color of the blood in the mesenteric veins assumed its ordinary dark purple color immediately after the oxygen was withdrawn, while the bright color returned almost instantly when the new supply of oxygen was introduced. I have been informed by Dr. Hal Wyman, of Detroit, that he made a similar experiment upon dogs a number of years ago, and that he observed the same result as regards the effect of the oxygen on the color of the blood in the portal circulation, but I understand that he made no attempt to employ oxygen in this manner for therapeutic purposes. Indeed, I am not aware that the gas has been used in this manner prior to my own experiment in the case which I have reported. I shall, however, be much surprised if I learn that I am entitled to the credit of priority in this matter, as it seems to me that I must have been very dull not to have sooner thought of this mode of employing so valuable an agent as oxygen.

It has been long known to physiologists that in certain fishes the mucous lining of the alimentary canal performs a very important part of the work of the respiratory system. Some members of the gar family are killed as quickly by cutting off the supply of oxygen to the alimentary canal as by interrupting the gill respiration. Great numbers of illustrations might be given from the lower classes of the animal kingdom in which the entire process of respiration is carried on by the mucous lining of the alimentary canal. Why, then, should not man, whose alimentary canal is very much more extensive and better fitted for absorption than in lower animals, also be able to receive a very appreciable and effi-

tion of two litres of pure oxygen gas on June 20. At this time the patient, a man of 28 years, was passing very great quantities of uric acid daily, a large quantity of crystals being thrown down from every specimen of urine passed. The symptom had persisted most stubbornly for weeks in spite of the enforcement of a non-nitrogenous diet, the patient also taking by direction from three to five pints of hot water daily. The beneficial effect of either regimen or treatment was so slight as to be scarcely perceptible. Two litres of oxygen were administered regularly each day about 10 A.M. At the end of three days the excess of uric acid disappeared entirely from the urine, and has appeared only twice since, and then in small quantity, when the injection had been discontinued for a day or two. At the beginning of treatment the patient's skin was very muddy, sclerotics dingy, tongue coated, and he complained of a constant and very annoying brassy taste in the mouth and distressing headache. The brassy taste and headache both disappeared very soon after the injections were begun, and there has been a steady improvement in every other particular. The coat has disappeared from the tongue, the skin and sclerotics have become nearly normal in appearance, and the patient has gained several pounds in weight, though before he had been constantly losing weight for some weeks, and seems to be in every respect improved. The patient, a very intelligent gentleman, attributes his improvement almost wholly to the employment of the oxygen, as the measures which had been previously employed had had little or no favorable influence upon his condition, and no change in regimen or treatment has been made with the exception of the administration of the oxygen. It seems to the writer that there may be a large field of usefulness for oxygen employed after this method. The advantages of the employment of oxygen by enema, as compared with the inhalation of oxygen, are very great.

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it is necessary for a person to inhale a very large amount, making the treatment very expensive.

2. Experiments which have been made for the purpose of testing the therapeutic value of oxygen inhalations have shown that the proportion of oxygen absorbed by the lungs is not proportionally increased by the increase of the percentage of oxygen in the respired air. Indeed, the reported results of careful experiments show that very little more oxygen was actually received by the system when breathing pure oxygen than in the breathing of ordinary atmospheric air. When oxygen is introduced into the alimentary canal the entire quantity introduced is absorbed, and thus utilized, making it possible to introduce a known quantity of oxygen into the system, and in a manner which leaves no room for doubt that it has been received and appropriated.

3. In cases in which it may be considered desirable that a considerable quantity of oxygen should be introduced into the system for the purpose of encouraging the oxidation processes by which effete matters are disintegrated and prepared for alimentation, especially those which are acted upon by the liver, the oxygen enema offers a means by which the gas can be applied where it is most needed. Oxygen received by the lungs passes at once to the left side of the heart, and thence through the arterial system to the entire body, so that the liver receives no more than its due proportion of the gas. Consequently, a very considerable increase in the quantity of oxygen absorbed through the lungs would scarcely increase to an appreciable degree the amount of oxygen available for use by the liver. This fact is made particularly conspicuous when we reflect that the chief source of blood-supply to the liver is the portal circulation. It is apparent, however, that when oxygen is introduced into the lower part of the alimentary canal, it is at once received through the venous absorbents into the portal circulation, through which it is conveyed directly to the liver, precisely where it is needed, thus making the entire amount of oxygen administered available for the purpose for which it is administered. Is it not, then, apparent that this method of administering oxygen possesses, for cases of the sort referred to, an immense advantage over its use by inhalation?

4. The process of digestion is, from a chemical stand-point, chiefly a process of hydration and oxidation. The experiments

of Dujardin-Beaumetz, performed some time ago, showed that the drinking of oxygenated water exerts a very beneficial effect upon the digestive process in persons suffering with slow digestion. (I have not seen any extended account of experiments of Dujardin-Beaumetz; I have simply seen in medical literature a mention of the fact stated.) May it not be true that, in some cases at least, the difficulty under which the digestive organs labor is a lack of a sufficient supply of oxygen in the blood, or, at any rate, that the introduction of oxygen into the portal circulation by oxygen enemata may be found to facilitate the digestive process? It is very easy to make a practical test of the matter, and I am now engaged in a series of experiments in the use of oxygen in various forms of dyspepsia, the results of which I shall report at some future time.

5. It seems to me that oxygen enemata may be employed advantageously in a great variety of cases; in fact, in all cases in which there is such a disturbance of the normal interchange of gases in the lungs as deprives the system of its proper amount of oxygen. The mucous membrane of the intestines presents an absorbing surface; very small, it is true, when compared with the amount of surface presented to the air in the lungs, and yet it is sufficiently great to allow of the introduction into the system of a large amount of oxygen in addition to that which can be gotten in through the lungs; and this additional quantity, though small when compared with the total amount received by the lungs, may be of sufficient value to the system to be of immense advantage to it, especially on account of its introduction at this particular point in the circulation. The notable functional disturbances of the stomach which accompany various pulmonary disorders, such as emphysema, chronic bronchial catarrh, chronic pleurisy, pneumothorax, etc., suggest a very important relation between the digestive function and the quantity of oxygen received through the lungs. The same relation is also suggested by the frequency with which dyspepsia occurs among sedentary persons, who are habitually air-starved in consequence of deficient muscular activity. Oxygen enemata may prove a valuable remedy in cases of this sort, as well as in others in which an additional supply of oxygen is needed.

I have carefully questioned patients respecting the retention of the oxygen injected, and have found that it has always been retained without difficulty, and does not pass

off as flatus from the bowels or eructations from the stomach. This fact offers good evidence of its absorption, but to determine the fact beyond the possibility of question, I made on July 20 an experiment on a guinea-pig. After placing the animal under chloroform, the abdomen was opened, and the intestines drawn out and spread out in such a way that the dark portal veins were in full view. A quantity of gas was then injected into the rectum, and to my great satisfaction I found that the dark venous blood assumed a bright red hue almost equal to that of arterial blood within less than one minute after the injection of the gas, showing the rapidity with which the absorption of the oxygen takes place. To confirm the result, I allowed the oxygen to escape from the bowels, afterwards replacing it, and repeating the experiment several times. In each instance the color of the blood in the mesenteric veins assumed its ordinary dark purple color immediately after the oxygen was withdrawn, while the bright color returned almost instantly when the new supply of oxygen was introduced. I have been informed by Dr. Hal Wyman, of Detroit, that he made a similar experiment upon dogs a number of years ago, and that he observed the same result as regards the effect of the oxygen on the color of the blood in the portal circulation, but I understand that he made no attempt to employ oxygen in this manner for therapeutic purposes. Indeed, I am not aware that the gas has been used in this manner prior to my own experiment in the case which I have reported. I shall, however, be much surprised if I learn that I am entitled to the credit of priority in this matter, as it seems to me that I must have been very dull not to have sooner thought of this mode of employing so valuable an agent as oxygen.

It has been long known to physiologists that in certain fishes the mucous lining of the alimentary canal performs a very important part of the work of the respiratory system. Some members of the gar family are killed as quickly by cutting off the supply of oxygen to the alimentary canal as by interrupting the gill respiration. Great numbers of illustrations might be given from the lower classes of the animal kingdom in which the entire process of respiration is carried on by the mucous lining of the alimentary canal. Why, then, should not man, whose alimentary canal is very much more extensive and better fitted for absorption than in lower animals, also be able to receive a very appreciable and effi-

cient amount of oxygen through this channel? In my experiments thus far I have found that patients take without inconvenience from one to two litres of the gas at a time, and this dose can be repeated three or four times in the twenty-four hours without any difficulty. I have never found any serious discomfort to be produced, although in large quantities it does not seem to be tolerated quite so readily as the carbon-dioxide and sulphuretted hydrogen mixture.

I am employing the oxygen enemata in a variety of cases, in one of which, a case of phthisis, the beneficial results arising from the gas have been surprising. When the treatment was begun the patient had for some time had an evening temperature varying from two to three degrees above normal. The morning temperature was from 99° to $99\frac{1}{2}^{\circ}$. Within forty-eight hours after the use of the oxygen was begun the temperature fell to normal, and did not rise above 99° at any time until about two weeks after the beginning of treatment, when the febrile symptoms reappeared as a result of an operation for the relief of a troublesome hemorrhoid, following which the patient by imprudence contracted a slight cold.

In the use of the oxygen enema I have employed a new form of apparatus, which I devised some time ago, and which I described in a paper read before the late meeting of the Medical Association in Chicago. The especial advantages of this apparatus are convenience in use, precision in dose, and an easily-regulated and perfectly uniform flow.

THE FOUR CEREBRAL HEAT-CENTRES.

BY ISAAC OTT, M.D., AND WILLIAM S. CARTER.*

THE discovery that fever† is mainly a disease of the nervous system, that albumoses, peptones, the leucomaine neurine,‡ produce fever through it, that the modern antipyretics reduce fever by an action on it, all of which can be shown by the curarization of animals, have stimulated us to study more minutely the heat-centres first discovered by one of us to be about the corpus striatum. The ascribing of fever, sleep, and the action of peripheral irritants to the modifications of

the circulation is an entirely erroneous view of the true state of affairs in these cases; the circulatory changes are merely associated phenomena.

Method.—Our experiments were performed upon rabbits, and punctures of the brain made through trephined openings in the skull and through the orbit. After the operation the wounds were cleansed with a sublimate solution, the parts united by sutures, and the animal permitted to run about the laboratory. The trephine used was usually one about three millimetres in diameter, occasionally a larger one of Pasteur's. The instrument with which we punctured was about three millimetres in width at its point and a millimetre in the shank. To hit the anterior ends of the thalami, or parts in front of them, we felt for a prominence just back of the orbit, and drew an imaginary line through its middle, making the puncture about a millimetre from the median line. After the observations were completed the animal was killed, and sections of the brain made to determine the seat of the puncture. The thermometers used were corrected at the Yale Observatory, and the bent rectal thermometer was always used in the same manner. The calorimetric observations were made with D'Arsonval's calorimeter, which was surrounded with feathers, felt, and saw-dust. The error is $.025^{\circ}$ F. for each degree the air is above the temperature of the calorimeter. We used the instrument so that it was about a degree below the temperature of the surrounding air. One of us has already determined that the cortex overlying the basal ganglia has when injured but little effect upon the temperature. Lesions of the cortex beneath the thalami cause a slight fugitive increase.

One of us, in July, 1885, determined that the thalamus increases the temperature by augmenting heat production.

Drs. Sachs§ and Aronsohn, in October, 1885, have shown that wounds of the tissues about the corpora striata and the nodus cursorius increase the urinary nitrogen, the amount of oxygen absorbed and carbonic acid exhaled, and the pulse and respiration. These facts do not prove that the increased temperature is due to increased production, for D'Arsonval¶ has shown that chemical processes do not give the exact measure of the production of heat, since the incubating egg

* Student of Medicine.

† Ott and Collmar, *Philadelphia Medical News*, 1887, and *Journal of Physiology*, August, 1887.

‡ Ott, *Journal of Nervous and Mental Diseases*, April, 1884.

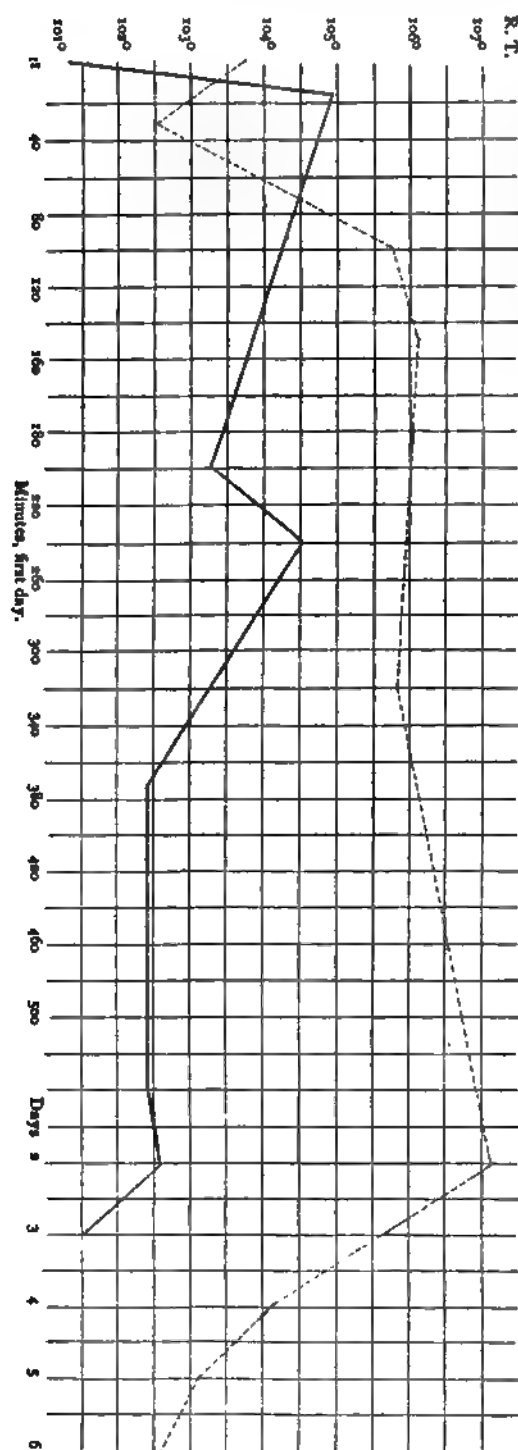
§ *Philadelphia Medical News*, July, 1885.

¶ *Pflüger's Archiv*, 1885.

¶ *Compt. Rendus*, 1881.

in its first stage absorbs considerable heat and also oxygen, whilst it exhales carbonic acid. It is necessary to study in addition arterial tension, and also make at the same time

FIG. 1.

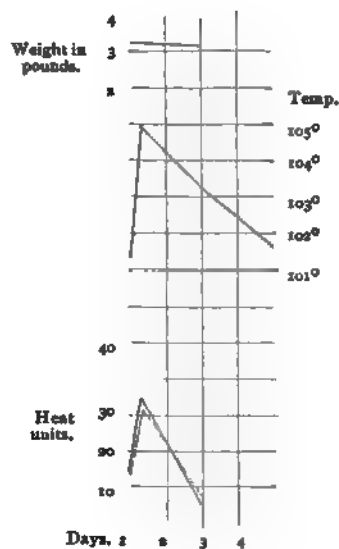


calorimetric observations, to be absolutely sure that the thermometric increase is due to augmented production of heat. This we

propose to do in this paper, so that at the same time we can give the height of the thermometer, the amount of heat production and heat dissipation, and the decrease of weight for each day of the fever.

1. *The Heat-Centre about the Corpus Striatum.*—It has already been noted by one of us,* when a transverse section of both corpora striata were made, that the temperature rose rapidly to $111\frac{1}{2}^{\circ}$ F. Lesions in front of and beneath the corpus striatum cause a rise of temperature. Thus we have discovered that a transverse section a millimetre in front of the anterior ends of the striate bodies is followed by a rapid rise of temperature, which lasts till the third day. In Fig. 1 the continuous line shows the quick rise and the slow fall of temperature. Fig. 2 shows that

FIG. 2.



heat production is immediately increased, as is also heat dissipation, but on the second day they both fell below normal. On the third day the temperature was about normal, being a little above it. This is the most anterior point in the brain which will cause any marked rise in temperature.

2. *The Caudate Nucleus* (Sachs and Aronsohn).—It was discovered by Drs. Sachs and Aronsohn that on the median side of the nodus cursorius a puncture causes a gradual increase of temperature, which reaches its height in twenty-four to seventy hours.

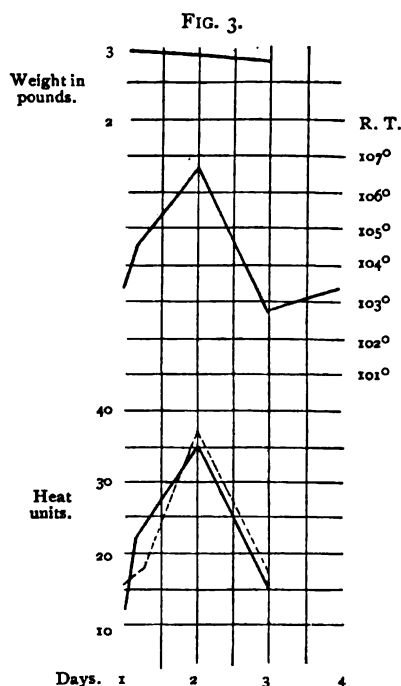
Girard† has also confirmed these observations. Baginsky‡ has extirpated the caudate

* *Journal of Nervous and Mental Diseases*, April, 1884.

† *Archives de Physiologie*, 1886.

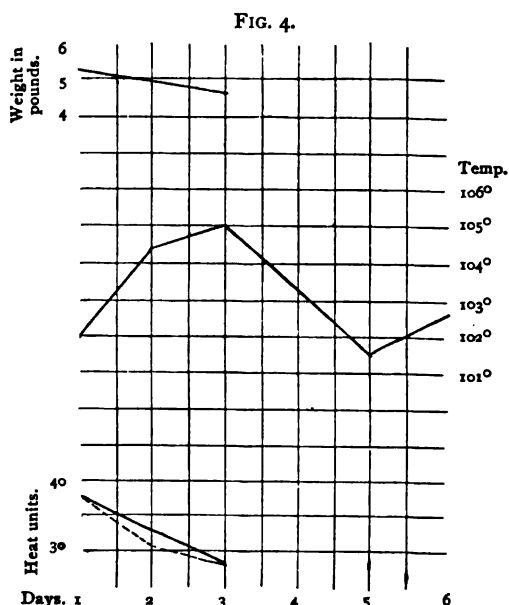
‡ *Virchow's Archiv*, October, 1886.

nucleus, and seen a rise of temperature. We have studied the effect of punctures in this region, and find, as they state, the rise of temperature does not reach its acme till the second day. In Fig. 1 the dotted line shows this gradual increment of temperature. This slow rise is preceded, by a fall, which is not great and lasts but a short time. As to the effect of puncture on heat production and heat dissipation our researches have yielded the following results. With a falling weight, the temperature, heat production, and heat dissipation were increased, and this increase was greater next day. On the third day they fell, the temperature below normal, heat production above normal, and heat dissipation to normal. These changes are illustrated by Fig. 3.



That increase of temperature is not always a sure index of increased heat production is shown in Fig. 4, where the temperature attains its height on the third day, but both heat production and heat dissipation are steadily falling. The question now arises, Can the increase of respiration, cardiac activity, and arterial tension be the cause of the elevation of temperature in wounds of the substrate and the striate centres themselves? By examining Fig. 5 it will be seen that in an animal bound down they all rise for a short time, as also does the temperature; but when the temperature is at its height they are all falling, except the respiration is suddenly increased by allowing the animal to be un-

bound. From these data we think it fair to state that without doubt punctures in the neighborhood of the corpus striatum and about the nodus cursorius cause a heightened temperature, due to increased production of heat. Exceptionally, whilst the temperature



is rising, both heat production and dissipation are steadily falling.

In all our experiments the weight steadily decreased, even when the animal ate with its usual gluttony.

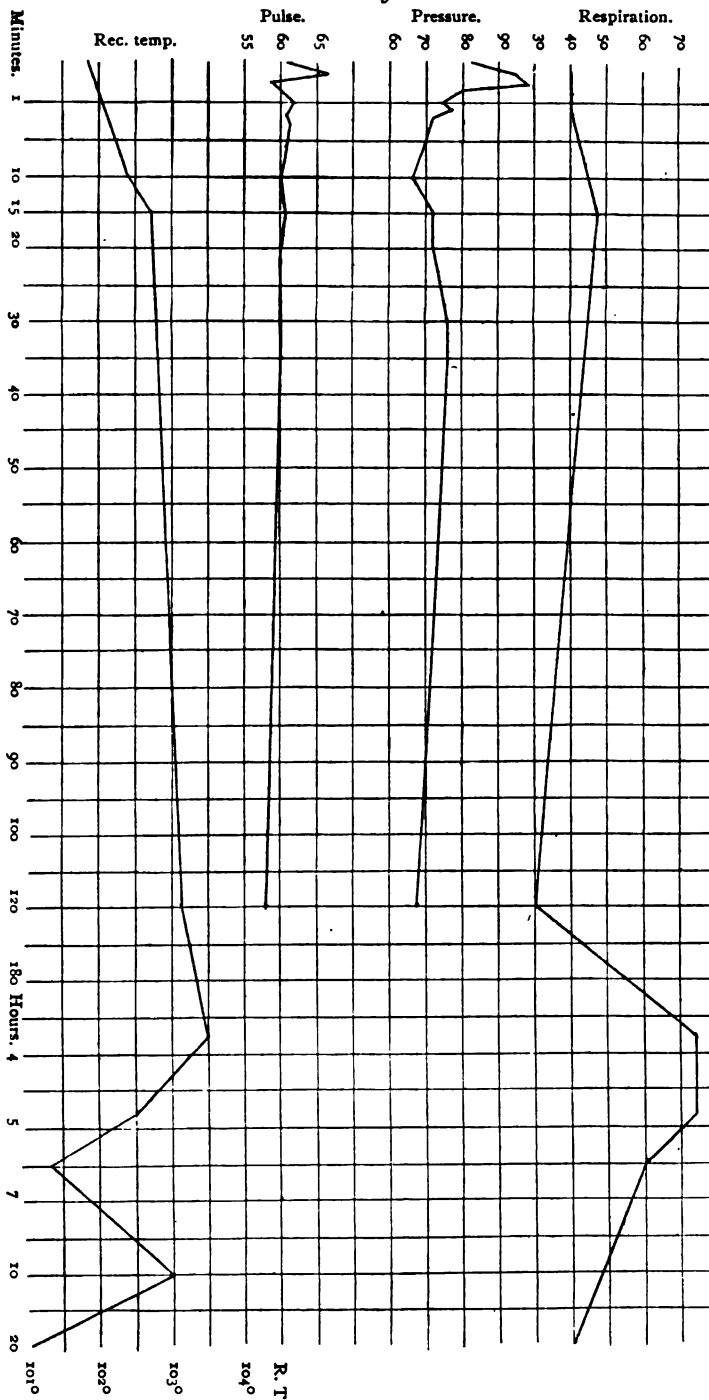
3. *The Anterior Inner End of the Thalamus Opticus.*—We have again subjected this point to thermometric and calorimetric tests. Transverse section of the optic thalamus caused a rise when it penetrated the anterior inner part, showing that these centres are not in the base of the thalamus.

The rise of temperature after lesions at this point is rapid, attaining 109° F., and falling in six to twelve hours below normal. The continuous line in Fig. 6 illustrates this point. With the calorimeter the heat production increases with the temperature, as also does heat dissipation. These data are well shown in Fig. 7. The query also arises here, Is this increase of temperature due to accelerated circulation, respiration, and augmented arterial tension? By an examination of Fig. 8, they are all found to have been falling at the time the temperature is rising. The subsequent sudden rise of the curve of respiration is due to the unbinding of the animal. These curves show that the increase of respiration, circulation, or arterial tension has no part in the increment of heat production after injuries at the anterior inner end of the thalamus.

4. *The Heat-Centre about Schiff's Crying-Centre.*—When a puncture is made in the tissues between the optic thalamus and the corpus striatum near the median line the rabbit

states that the cry occurs only in males, but we cannot confirm anything about this point, having made no careful observations. The rise of temperature here is rapid and slowly

FIG. 5.



often utters a peculiar cry, which is soon followed by increased temperature. Schiff *

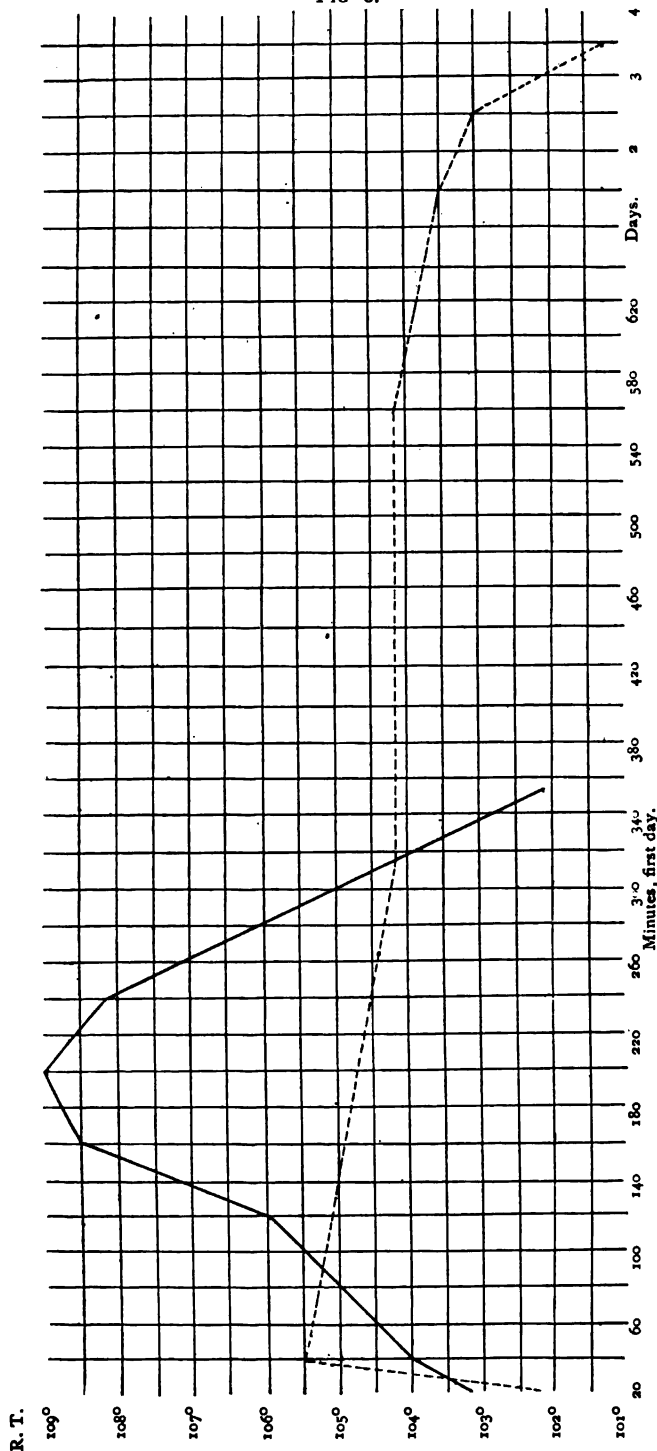
descends, not reaching normal till during the third or fourth day. The dotted line in Fig. 6 illustrates the course of the temperature. When the temperature rises heat production

* Lehrbuch der Physiologie des Menschen, 1859, p. 349.

and heat dissipation are increased, but on the following day they are below normal, although the temperature does not reach the normal level till the fourth day. A loss of weight

sion is proven by Fig. 10, where at the time the temperature rises greatly they are falling. The sudden rise afterwards in respiration is due to unbinding the animal. From these

FIG 6.



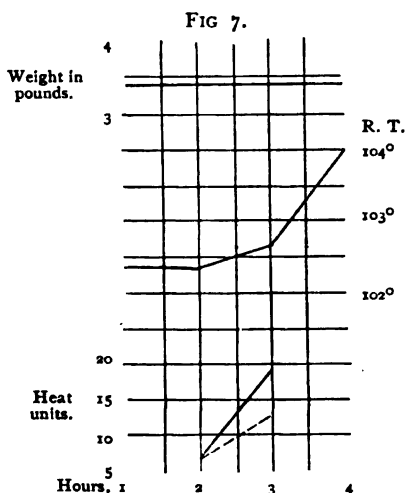
slowly took place during these observations. All these facts are shown in Fig. 9.

That this rise is not due to increase of cardiac action, respiration, and arterial ten-

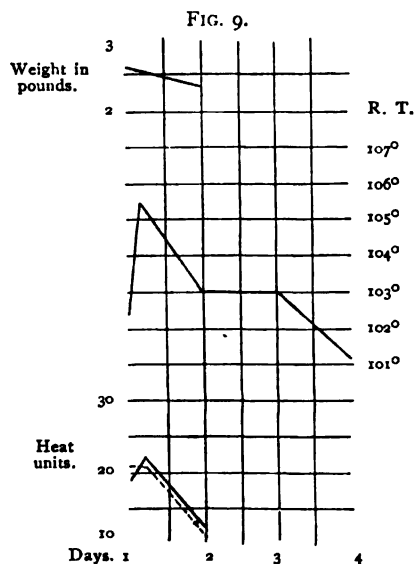
observations we conclude that the heat-centre about Schiff's crying-centre does not increase heat production through the blood, its movements, or its oxidation.

5. *The Value of the Four Heat-Centres compared with each other.*—We shall first consider the point with regard to the elevation of temperature. The anterior inner part of the

fourth day. Of course a division of the heat-centre on both sides of the brain will cause a greater rise than when one side of the brain is injured. The tissues beneath the corpora

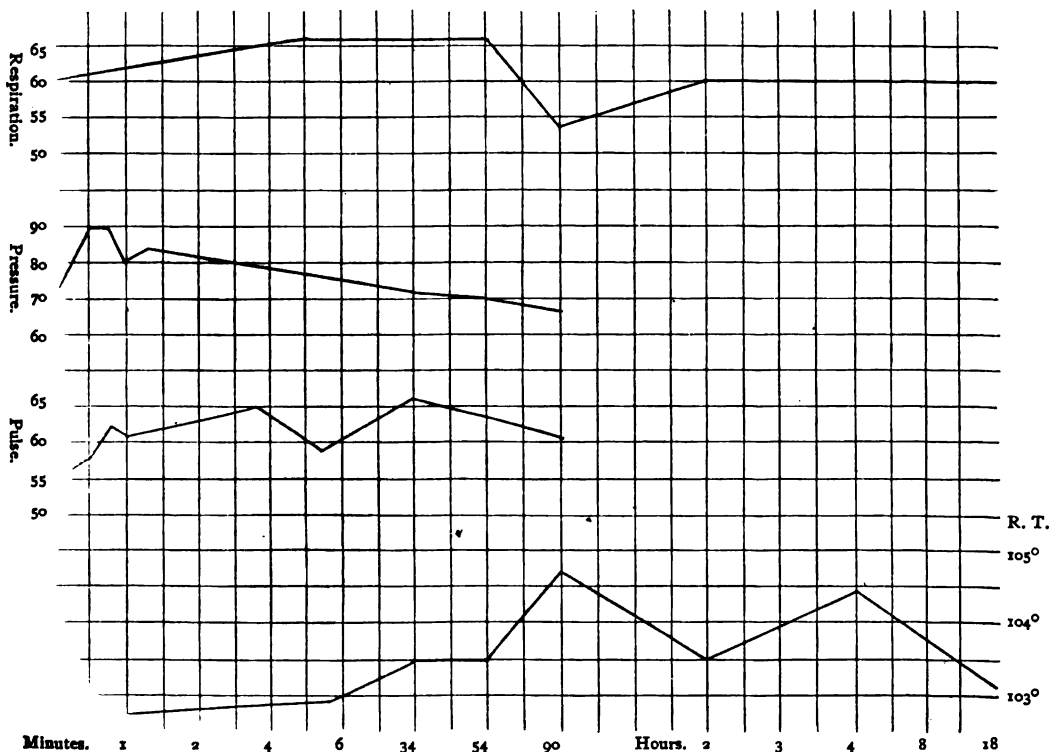


optic thalamus gives us a temperature frequently of 109° F., a rise of 6° F., whilst the highest rise to be found in any of the experiments of Sachs and Aronsohn about the



striata cause a rapid rise of temperature, which continues till the third or fourth day,

FIG. 8.



corpus striatum is 43.2° F., and this is not usual. As to duration of the elevation, the parts about the nodus cursorius and Schiff's crying-centre seem to continue up to the

but the rise is never equal to that caused by injuries of the thalamic centre. In Fig. 11 we have given the location of these centres in the brain: 1 is the heat-generating tissue be-

Time. A.M.	Cal. temp.	Rec. temp.
10.10	Several punctures into anterior part of corpus striatum, about the nodus cursorius.	
10.20	.....	103.3°
P.M.		
8.10	.....	103.4°

Second day ; weight, 4.96 pounds.

Time. A.M.	Cal. temp.	Rec. temp.
9.25	85.9°	104.5°
10.25	86.65°	104.9°
Heat dissipation before puncture		
		37.54
Heat dissipation after puncture.....		
		31.29
Heat production before puncture		
		37.54
Heat production after puncture.....		
		32.93

Third day ; weight, 4.72 pounds.

Time. A.M.	Cal. temp.	Rec. temp.
10.05	85.2°	105.1°
11.05	85.9°	105.1°
Heat dissipation		
		28.99
Heat production.....		
		28.99

Fourth day.

Time. A.M.	Cal. temp.	Rec. temp.
7.00	103.3°

Fifth day.

Time. A.M.	Cal. temp.	Rec. temp.
9.00	101.6°

Sixth day.

Time. A.M.	Cal. temp.	Rec. temp.
9.00	102.5°

Seventh day.

Time. A.M.	Cal. temp.	Rec. temp.
9.00	103.1°

Experiment 4.—Rabbit.

Time. A.M.	Pulse.	Press.	Resp.	Air temp.	Rec. temp.
11.30	...	...	40	87°	101.8°
11.31	62	84	...	.....	.....
11.31.30	Puncture about nodus cursorius.				
11.31.45	60	96	...	.....	.....
11.32	63	76	40	.....	.....
11.41	60	68	...	.....	102.4°
11.45	61	72	48	.....	102.7°
12.00	60	76	...	.....	102.8°
P.M.					
1.30	57	68	30	.....	103.1°
3.15	Not bound down.		76	.....	103.5°
6.00	...	...	60	.....	101.4°
9.45	...	...	..	.....	103.1°

Second day.

Time. A.M.	Pulse.	Press.	Resp.	Air temp.	Rec. temp.
7.40	40	.....	101.1°

Experiment 5.—Rabbit ; weight, 3.32 pounds.

Time. P.M.	Cal. temp.	Rec. temp.
1.55	84.7°	103.7°
2.55	85.7°	101.3°
3.00	Right corpus striatum punctured.	
3.32	.....	102.5°
8.55	.....	105.8°

Second day ; weight, 3.42 pounds.

Time. A.M.	Cal. temp.	Rec. temp.
8.00	.....	107.1°
P.M.		
1.54	86.8°	106.9°
2.54	87.8°	106.0°

Heat dissipation before puncture		
		41.72
Heat dissipation after puncture.....		
		41.72
Heat production before puncture.....		
		35.04
Heat production after puncture.....		
		39.16

Third day ; weight, 3.22 pounds.

Time. P.M.	Cal. temp.	Rec. temp.
2.00	86.1°	105.5°
3.00	87.05°	105.3°

Heat dissipation		
		39.63
Heat production.....		
		34.29

Fourth day ; weight, 3.24 pounds.

Time. P.M.	Cal. temp.	Rec. temp.
2.05	81.2°	104.3°
3.05	82.2°	102.3°

Heat dissipation after puncture.....		
		41.72
Heat production after puncture.....		
		36.28

Fifth day.

Time. A.M.	Cal. temp.	Rec. temp.
9.00	103.3°

Sixth day.

Time. A.M.	Cal. temp.	Rec. temp.
9.00	102.6°

Experiment 6.—Rabbit ; weight, 2.56 pounds.

Time. A.M.	Cal. temp.	Rec. temp.
10.35	84.7°	102.3°
11.35	88.2°	101.9°
11.40	Puncture about Schiff's crying-centre.	
P.M.		
12.15	.....	103.5°
1.50	.....	103.2°
2.00	.....	105.5°
3.00	86.4°	105.3°
4.00	86.9°	105.1°
6.00	.....	105.0°
10.00	.....	104.3°

Second day; weight, 2.38 pounds.

Time.	Cal. temp.	Rec. temp.
A.M.		
10.20	85.6°	103.1°
11.20	86.0°	103.4°

Third day.

Time.	Cal. temp.	Rec. temp.
A.M.		
8.45	103.0°
P.M.		
9.40	101.7°

Fourth day.

Time.	Cal. temp.	Rec. temp.
A.M.		
9.45	101.5°

Experiment 7.—Rabbit.

Time.	Pulse.	Press.	Resp.	Air temp.	Rec. temp.
P.M.					
2.16.30	51	68	60	89°	102.7°
2.16.45	Puncture into the heat-centre of optic thalamus.				
2.17.15	58	90	...	.....	.....
2.17.30	62	90	...	.....	.....
2.17.45	61	80	...	.....	.....
2.22	59	76	...	.....	102.9°
2.50	66	72	...	.....	103.5°
3.10	64	70	66	.....	103.5°
3.45	61	66	54	.....	104.2°
4.15	Unbound.	...	60	.....	103.5°
6.00	...	...	...	.....	104.4°
9.45	...	...	...	.....	103.8°

Second day.

Time.	Pulse.	Press.	Resp.	Air temp.	Rec. temp.
A.M.					
7.00	60	.....	103.1°

Experiment 8.—Rabbit; weight, 2.80 pounds.

Time.	Cal. temp.	Rec. temp.
P.M.		
1.33	75.1°	104.2°
2.33	75.9°	103.5°
	+ 8°	— 7°
2.35	Puncture into the middle of the thalamus.	
3.15	76.4°	103.5°
4.15	78.2°	104.2°
	+ 7°	+ 7°

Heat dissipation before operation.....	10.21
Heat dissipation after operation.....	10.12
Heat production before operation.....	16.29
Heat production after operation.....	11.74

Experiment 9.—Rabbit.

Time.	Pulse.	Press.	Resp.	Air temp.	Rec. temp.
A.M.					
9.40	47	80	60	90°	101.1°
9.40.45	Puncture about Schiff's crying-centre.				
9.41	50	80	...	.....	.....
9.41.15	47	82	...	.....	.....
9.41.45	41	88	...	.....	.....
9.42	53	92	...	.....	.....
9.58	50	90	...	.....	101.7°
10.06	53	90	45	.....	101.3°
11.10	53	76	35	.....	101.4°

Time.	Pulse.	Press.	Resp.	Air temp.	Rec. temp.
P.M.					
2.30	Unbound.	...	100	.....	104.8°
4.10	...	...	60	.....	104.8°
8.25	...	...	50	.....	104.6°
9.20	...	...	...	.....	104.3°

Second day.

Time.	Pulse.	Press.	Resp.	Air temp.	Rec. temp.
A.M.					
8.00	40	.....	104.6°

Experiment 10.—Rabbit.

Time.	Pulse.	Press.	Resp.	Air temp.	Rec. temp.
P.M.					
1.20	50	54	60	90°	102.7°
1.20.15	Puncture about nodus cursorius.				
1.20.30	56	56	52	.....	.....
1.20.45	63	62	...	.....	.....
1.35	57	48	60	.....	102.8°
1.50	59	44	...	.....	.....
2.50	54	48	42	.....	102.7°
3.00	51	40	...	.....	.....
4.10	Animal unbound.		60	.....	103.5°
8.25	...	...	52	.....	103.3°
9.00	...	...	...	.....	103.8°

Second day.

Time.	Pulse.	Press.	Resp.	Air temp.	Rec. temp.
8.00	30	.....	102.3°

Experiment 11.—Rabbit; weight, 3.76 pounds.

Time.	Cal. temp.	Rec. temp.
A.M.		
8.40	.....	103.4°
9.40	.....	101.9°
10.00	Corpora striata both considerably injured.	
10.35	.....	102.4°
5.15	.....	101.3°

Second day.

Time.	Cal. temp.	Rec. temp.
A.M.		
7.00	102.4°

Experiment 12.—Weight, 2.9 pounds.

First day.

Time.	Cal. temp.	Rec. temp.
P.M.		
2.50	85.65°	103.5°
3.50	86.25°	102.3°

Heat dissipation before operation.....	25.03
Heat production before operation.....	22.14

5.00 Deep puncture into right corpus striatum.

Second day.

Time.	Cal. temp.	Rec. temp.
P.M.		
4.00	85.8°	106.7°
5.00	86.7°	105.8°

Heat dissipation.....	37.54
Heat production.....	35.38

Third day; weight, 2.84 pounds.

Time.	Cal. temp.	Rec. temp.
P.M.		
4.00	87.8°	102.7°
5.00	88.2°	103.0°

Heat dissipation	16.68
Heat production	15.98

Fourth day.

Time.	Cal. temp.	Rec. temp.
A.M.		
11.00	103.1°

Experiment 13.—Rabbit; weight, 3.2 pounds.

Time.	Cal. temp.	Rec. temp.
A.M.		
8.55	84.6°	102.7°
9.55	85.2°	102.3°
11.15	Skull trephined; puncture about the nodus cursorius.	
11.25	.....	102.3°
P.M.		
8.30	.....	102.3°

Second day; weight, 2.92 pounds.

Time.	Cal. temp.	Rec. temp.
A.M.		
9.00	79.9°	105.1°
10.00	80.6°	104.6°

Heat dissipation before puncture.....	25.03
Heat dissipation after puncture.....	29.20
Heat production before puncture.....	27.39
Heat production after puncture.....	27.99

Third day.

Time.	Cal. temp.	Rec. temp.
A.M.		
9.00	105.6°

Fourth day.

Time.	Cal. temp.	Rec. temp.
A.M.		
9.00	102.5°

Experiment 14.—Rabbit; weight, 4.2 pounds.

Time.	Cal. temp.	Rec. temp.
P.M.		
12.10	85.95°	101.4°
1.10	86.30°	101.7°
1.20	Puncture into right corpus striatum about the middle.	
2.10	.....	102.9°
4.00	87.2°	104.1°
5.00	87.5°	105.1°

Heat dissipation before puncture.....	14.60
Heat dissipation after puncture.....	12.51
Heat production before puncture	15.62
Heat production after puncture	15.91

Second day; weight, 3.86 pounds.

Time.	Cal. temp.	Rec. temp.
P.M.		
12.07	85.4°	104.2°
1.07	85.8°	103.9°

Heat dissipation.....	16.68
Heat production.....	15.72

Time.	Cal. temp.	Rec. temp.
P.M.		
9.35	103.6°

Third day.

Time.	Cal. temp.	Rec. temp.
A.M.		
9.00	101.3°

Experiment 15.—Rabbit; weight, 3.16 pounds.

Time.	Cal. temp.	Rec. temp.
A.M.		
9.55	83.95°	102.1°
10.55	84.5°	102.9°
11.30	Puncture into corpus striatum down to base of brain.	
P.M.		
2.15	85.8°	104.9°
3.15	86.38°	104.3°

Heat dissipation before puncture.....	17.38
Heat dissipation after puncture.....	18.32
Heat production before puncture.....	16.86
Heat production after puncture.....	17.01

Time.	Cal. temp.	Rec. temp.
P.M.		
3.40	103.9°

Experiment 16.—Rabbit; weight, 2.62 pounds.

Time.	Cal. temp.	Rec. temp.
M.		
12.00	82.2°	102.3°
P.M.		
1.00	82.65°	102.7°
1.30	Puncture into anterior end of the thalamus, extending into the neighborhood of Schiff's crying-centre.	
2.15	.....	102.9°
3.20	.....	103.7°
4.15	83.1°	104.6°
5.15	83.78°	105.4°

Heat dissipation before puncture	18.77
Heat dissipation after puncture.....	28.36
Heat production before puncture.....	19.63
Heat production after puncture	29.99

Time.	Cal. temp.	Rec. temp.
P.M.		
8.30	104.5°

Second day; weight, 2.44 pounds.

Time.	Cal. temp.	Rec. temp.
A.M.		
11.52	84.4°	104.6°
12.52	85.0°	104.3°

Heat dissipation	25.63
Heat production	24.43

Third day.

Time.	Rec. temp.	Cal. temp.
A.M.		
12.00	102.3°

Experiment 17.—Rabbit; weight, 2.62 pounds.

Time.	Cal. temp.	Rec. temp.
A.M.		
9.25	84.2°	102.5°
10.25	84.7°	101.9°
11.37	Puncture about Schiff's crying-centre and the anterior inner end of the thalamus.	
11.45	.....	102.1°
12.00	.....	102.6°
P.M.		
12.50	.....	104.1°
1.40	.....	104.3°
2.00	85.9°	104.5°
3.00	86.4°	105.9°

Heat dissipation before puncture.....	20.86
Heat dissipation after puncture.....	20.86
Heat production before puncture.....	19.56
Heat production after puncture.....	23.78

Time.	Cal. temp.	Rec. temp.
P.M.		
10.00	104.3°

Second day; weight, 2.5 pounds.

Time.	Cal. temp.	Rec. temp.
A.M.		
9.20	85.3°	102.3°
10.20	85.6°	101.9°

Heat dissipation.....	12.51
Heat production.....	13.76

Time.	Cal. temp.	Rec. temp.
A.M.		
11.00	....	102.3°
11.30	Killed.	

Experiment 18.—Rabbit.

Time.	Cal. temp.	Rec. temp.
P.M.		
3.30	102.8°
3.35	Injection of solution of chromic acid into the anterior inner end of the right corpus striatum.	
3.50	101.5°
4.00	102.8°
4.05	103.3°
4.10	102.5°
4.15	101.3°
5.55	102.5°
7.20	102.3°
8.41	102.5°

Experiment 19.—Rabbit.

Time.	Pulse.	Pressure.	Rec. temp.
P.M.			
2.00	54	60	101.9°
	Puncture into right corpus striatum.		
2.00.15	62	64	.....
2.00.30	72	56	.....
2.00.45	53	58	.....
2.01	55	58	.....
2.01.30	38	40	.....
2.01.45	38	30	.....
2.10	...	...	101.6°

Experiment 20.—Rabbit; weight, 5.10 pounds.

Time.	Cal. temp.	Rec. temp.
P.M.		
1.45	.....	103.9°
2.48	The anterior ends of corpora striata divided down to the base of the brain through nodus cursorius.	
3.00	.....	103.4°
3.45	.....	105.3°
4.30	Died.	

Experiment 21.—Rabbit; weight, 4.04 pounds.

Time.	Cal. temp.	Rec. temp.
A.M.		
10.50	103.2°
10.55	Puncture at the anterior inner end of the thalamus.	
11.20	104.0°
1.15	105.1°
2.15	108.4°
3.10	109.0°
3.40	108.3°
4.38	104.6°
5.30	102.1°

Experiment 22.—Rabbit.

Time.	Cal. temp.	Rec. temp.
P.M.		
12.15	.....	103½°
12.16	A transverse puncture made through the temporal region into the anterior end of the thalamus.	
12.18	.....	104½°
2.20	.....	105½°
4.00	.....	106½°
6.00	.....	106¼°
7.00	.....	106°

Second day.

Time.	Cal. temp.	Rec. temp.
A.M.		
7.00	104½°

Experiment 23.—Rabbit.

Time.	Cal. temp.	Rec. temp.
P.M.		
1.55	.....	102.5°
	An eighth of an inch back of the main heat-centre in anterior inner end of thalamus.	
2.42	.....	104.3°
3.45	.....	105.0°
4.35	.....	104.4°
6.20	.....	104.3°
7.00	.....	103.8°
8.00	.....	102.9°

Experiment 24.—Rabbit.

Time.	Cal. temp.	Rec. temp.
P.M.		
2.44	.....	103.3°
	Puncture in thalamic heat-centre; cortex not injured.	
2.45	.....	103.3°
3.00	.....	103.5°
4.05	.....	105.4°
5.45	.....	105.5°
7.45	.....	105.1°

Second day.

Time.	Cal. temp.	Rec. temp.
A.M.		
8.10	102.3°

Experiment 25.

Time.	Cal. temp.	Rec. temp.
P.M.		
4.25	.....	103.3°
4.26	Puncture in the thalamic heat-centre; cortex at base slightly involved.	
5.45	.....	105.4°
7.45	.....	106.1°

Second day.

Time.	Cal. temp.	Rec. temp.
A.M.		
8.10	101.3°

Experiment 26.—Rabbit.

Time.	Cal. temp.	Rec. temp.
A.M.		
7.42	.....	101.8°
7.43	Puncture into anterior inner end of the optic thalamus.	
7.45	.....	103.3°
9.25	.....	104.3°
10.15	.....	104.8°
10.50	.....	105.3°
Animal killed.		

A NEW METHOD OF TREATING PHTHISIS
BY SUPER-ALIMENTATION.

DR. LANGOWAI, of the clinical staff of Professor Ostronmoff, in Moscow, has used with good results the following treatment, which he reports in the *Pharmaceutische Zeitschrift für Russland*, 1887, No. 24. Reviewing the mortality from phthisis, Langowai estimates that two-thirds of all deaths from chronic illness are from phthisis; he passes over with a brief mention the various germicides proposed to destroy the tubercle-bacillus, and describes at length the method of the French physician Debove, who, in treating a case of phthisis which was unable to retain food, had washed out the stomach, and so secured freedom from nausea and vomiting; he introduced through a stomach-tube extra diet into the patient's system—milk, soup, and eggs—with a favorable result: the cough and night-sweats grew less, and there was a gain in body weight of fourteen pounds in three months. Further investigations by Debove proved the increased assimilation of food by the increase in the urinary constituents excreted, which rose from a proportion of sixty to that of eighty. Later

in his treatment Debove added meat-powder to his other articles of diet, in quantities of from six drachms to twenty-five ounces daily. He was followed by a large number of other experimenters. For his investigations Langowai selected five cases of phthisis in the Moscow Clinic, in whom every means of diagnosis proved the existence of the disease in pronounced form. It was found that those cases in whom the parenchyma of the lung was not badly diseased sometimes recovered perfectly, while the worst cases were maintained for a long time. Langowai used in his treatment milk and meat-powder, the latter of which was prepared as follows: the best quality of meat was carefully freed from tendon and fat, and reduced to fine hash in a chopping-machine; it was then carefully dried in an oven at a temperature not exceeding 50° C. After drying the meat was powdered in a mortar and put through a fine, but non-metallic, sieve; the product was a fine powder, free from tendon, and having a faint odor of flesh. When the temperature was higher than 50° C. the meat was burned, and emitted an unpleasant odor. This meat-powder was kept in well-corked glass vessels, in a cool, dry place. By the method thus described neither the chemical nor histological properties of the meat were destroyed, the latter of which is especially important, as the microscope can reveal the addition of foreign substances in preparations offered for sale. The only change which the meat underwent was the loss of water, and this occurred in the proportion of three-fourths its body weight. To meet an objection which may possibly be raised by reason of the cost of the meat employed in making the powder, Langowai proposes the substitution of horseflesh for such as is generally employed. This meat is but little inferior to beef, as will be seen when we compare the two:

	Beef.	Horseflesh.
Salts, albumen, etc...	13.8 per cent.	12.5 per cent.
Phosphoric acid.....	1.69 "	1.66 "

Horseflesh is as well digested and gives as good results as beef. The above analysis is taken from Rubin. The meat-powder is given in sweetened water, with the addition of wine or peppermint-water. It may also be given in milk, soup, or spread upon bread with butter and cheese. Langowai gave his patients an amount of this powder equal to three pounds of meat. The merits of this treatment are sufficiently great to warrant apothecaries in preparing and keeping such meat-powders.

The Therapeutic Gazette

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DETROIT, MICH., Sept. 15, 1887.

GEO. S. DAVIS, Medical Publisher, Box 470.

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Leading Articles.

AMYLENE HYDRATE—A NEW HYPNOTIC.

AMYLENE HYDRATE is the most recent and promises to be one of the most important of the many late additions to the list of hypnotics. For its introduction we are indebted to Prof. J. von Mehring (*Therapeutische Monatshefte*, July, 1887). This substance, which belongs to the group of tertiary alcohols, was first discovered by Wurtz, and is prepared by treating trimethylethylene with sulphuric acid, amyl sulphuric acid being formed as an intermediate stage and breaking up on distillation with water, the tertiary alcohol being formed. Its more correct scientific name is dimethylethylcarbinol, and is represented by the formula $C_5H_{12}O = (CH_3)_2C(C_2H_5)OH$. Amylene hydrate is described as a clear, colorless liquid, with a penetrating odor, recalling camphor, oil of peppermint, and paraldehyde. It has a specific gravity of 0.81; when pure it boils at 102.5° Centigrade. Upon cooling it to 12.5° it solidifies in acicular crystals that melt at 12° Centigrade. It dissolves in 8 parts of water, and is miscible with alcohol in all proportions. Amylene hydrate appears to be specially liable to contamination

with amylic alcohol, which may be detected if present by the formation of valerianic acid upon oxidation with potassium bichromate and sulphuric acid.

In 1885 Von Mehring and Thierfelder (*Zeit. f. Phys. Chemie*, Bd. 1. s. 9) showed that when this substance was given to rabbits it was excreted as a compound of glycuronic acid, but in man and dogs was, to the greater part, as is ordinary alcohol, subjected to combustion. These experiments indicated that this substance was, in all probability, possessed of marked hypnotic properties, and for the last two years Von Mehring has been extending his experiments in this direction both on animals and on man, and he now announces that as a hypnotic amylene hydrate stands midway between chloral hydrate and paraldehyde, one gramme of chloral hydrate being estimated as equal to two drachms of amylene hydrate or three drachms of paraldehyde. His experiments were first made on frogs, rabbits, and dogs, and he found that hypodermic injections of 0.06 to 0.1 gramme in a frog, or 2 to 3 grammes introduced into the stomach in rabbits or 8 grammes in dogs, produced within ten to thirty minutes a deep sleep, which lasted from six to eighteen hours, animals appearing perfectly normal when the effects of the hypnotic pass off. In these doses, which were found amply sufficient to produce profound narcosis, scarcely the slightest impression was made upon the respiratory functions, respiration in the dog being reduced from twenty only to sixteen respiratory movements in the minute, a difference which is no more marked than occurs in normal sleep. The circulation likewise is scarcely affected by this drug, differences in the pulse-rate and blood-pressure after the administration of amylene hydrate being scarcely perceptible, a marked contrast to the serious effects often produced by chloral. The physiological action of this substance appears to be exerted principally upon the cerebrum. In larger doses it extends to the medulla oblongata, reflex action disappears, respiration slackens, and finally the heart stops. In doses suitable for the production of narcosis neither the respiration nor the heart's action are perceptibly affected, and Von Mehring states that he has even administered this drug to patients with extensive heart-defects with the most satisfactory results.

In all he has given amylene hydrate to sixty different individuals in three hundred and fifty different doses, each dose varying from 3 to 5 grammes (50–90 gtt.). The affections in

which he employed this substance were of the most varied character,—sleeplessness from nervousness, in delirium tremens, phthisis, and in convalescence from various febrile diseases. Only in four cases out of all these did it prove inefficacious. Twice it was employed in whooping-cough with a favorable result, but, like chloral, it proved unreliable in producing sleep when the wakefulness was due to pain. It is said to possess a less disagreeable taste than paraldehyde, and the exhalations after taking it are not so disagreeable. From its freedom from danger and more pleasant taste it is evidently to be preferred to either chloral or paraldehyde, even though it be weaker, as a hypnotic, than chloral. It may be administered internally or in enemata. Von Mehrling gives the following formula :

Amylene hydrate, 7 grammes ;

Aq. dest., 60 grammes ;

Extr. liq., 10 grammes. M.

S.—The half to be taken at night for sleeplessness.

Amylene hydrate, 5 grammes ;

Aq. dest., 50 grammes ;

Mucilag. gummi arab., 20 grammes. M.

S.—For use as an enema.

In sleeplessness from pain amylene hydrate may with advantage be combined with hydrochlorate of morphine. No unpleasant after-effect of any kind, according to Von Mehrling, follows the employment of this substance ; no nausea, vomiting, headache, or disturbance of digestion.

It must not be forgotten that hypnone, methylal, cannabinone, paraldehyde, hyoscine, and urethan, when first brought before the medical profession, were all supported in the strongest possible manner, and nearly every report of their employment was of the most favorable character. It was only as our experience became more extensive with these different substances that we found the use of one and all of them was in many cases attended by serious drawbacks. Perhaps amylene hydrate may prove no exception to this rule, although it must be confessed that its prospects as yet appear very promising.

A NEW VERMIFUGE.

DR. M. MARTINET writes to *Les Nouveaux Remèdes* for July, 1887, attributing vermifugal properties to the leaves of the *Sida Floribunda*. It appears that for the discovery of this substance M. Martinet was indebted to the instinct of his dog, which, after having

been sick for a number of days, himself sought out and devoured some leaves of this plant, and a few hours later was relieved at the same time of his sickness and a large number of intestinal worms. The plant is said to be very common in the neighborhood of Lima, and is a Malvaceæ of the genus *Sida*, and is designated under the name of *Sida Floribunda*. The mucilage, which is so abundant in the different species of Malvaceæ, is likewise present in this plant, but no substance can be discovered on chemical analysis to which its anthelmintic properties could be attributed. Microscopic examination, however, shows that all the leaves of this plant are covered with extremely minute resisting spines, and the vermifugal properties are, if present at all, without doubt to be attributed to the mechanical action of the plant. Their smallness enables them to escape destruction in mastication, and their structure, being composed almost entirely of cellulose, protects them from digestion, and, reaching the small intestine, they act as a mechanical vermifuge, in the same manner as kamala, which likewise should be included among the group of mechanical vermifuges.

ONE OF PASTEUR'S CRITICS.

ONE of the most amusing of the many wild criticisms to which Pasteur's anti-rabic investigations have been subjected appears in a recent number of the *Contemporary Review*, over the signature of Frances Power Cobbe. Miss Cobbe, we believe, is one of the shining lights of the English Society for the Suppression of Vivisection, and she finds her explanation of both the appointment and the favorable character of the report of the English Hydrophobia Commission in the determination of the English physiologists to obtain at any price any argument for doing away with the restrictions on English vivisection.

Miss Cobbe recognizes that if Pasteur's conclusions were true the best possible argument for abolishing restrictions on vivisection would be afforded, but she directly claims that the only reason why Pasteur's experiments have attracted the attention of all scientists is to be found in their cruelty.

"If Pasteur's vaunted remedy had been obtained without any cruel experiments ; if he had professed to cure hydrophobia by a method brought to light by clinical or microscopical observation, would he have been welcomed by the men of science of England as an illustrious '*savant*' ? Tell it to the marines."

Reports on Therapeutic Progress.

PILOCARPINE IN PUERPERAL ECLAMPSIA.

At a recent meeting of the South Australian Branch of the British Medical Association Mr. J. H. S. FINNISS, M.B., C.M. Edin., related a case of puerperal eclampsia in a woman, aged 24, treated by hypodermic injections of nitrate of pilocarpine (*British Medical Journal*, July 16, 1887). The first seizure occurred twenty-one hours after delivery; the fit was preceded by severe headache. Resort was at first had to chloral and bromide of potassium, combined with the administration of ether during the epileptiform fits, but without much benefit. The first dose of nitrate of pilocarpine ($\frac{1}{4}$ of a grain) was administered hypodermically at 7 A.M., thirty-seven hours after delivery. Within a minute or two profuse perspiration came on, and saliva poured out of her mouth; the pupils contracted a little. She had five more convulsions, with stertorous breathing in the intervals, up to 8 A.M., when the dose was repeated. She had had three more convulsions up to nine o'clock, but these were milder and shorter. During each fit ether was administered to assist in lessening arterial tension. She had no other fit until 2 P.M., she had another at 2.30 P.M., and a very severe one soon after 3 P.M. Nitrate of pilocarpine, $\frac{1}{4}$ of a grain, was injected; it produced the same physiological action as in the morning. At 8 P.M. she had slept for three hours; the temperature was 104.2° ; she was still unconscious; she passed urine and her motions in bed, but had had no more convulsions since the third injection. At seven o'clock the next morning her temperature was 103° ; she had had no return of the convulsions, and had slept at intervals through the night, but was still unconscious. At 8 P.M. of the same day the temperature was 98.2° ; she had had a good calm sleep for three hours in the afternoon. She subsequently progressed favorably. There was a trace of albumen in the urine when it was examined on the second day.

WARNINGS ABOUT THE USE OF ACETANILIDE.

Two articles have recently appeared in the Hungarian medical journal *Gyógyászat*, in which the profession is warned that acetanilide, or antifebrin as it is called, though

it is not without value, is an uncertain, and indeed a dangerous, antipyretic. Dr. Géza Dulácska finds, after giving the drug a prolonged trial in the hospital, that small doses may bring down fever, but that in some cases even 3-grain doses produce violent sweats, prostration, and hemorrhage or cyanosis. It does not appear to him to exert any favorable action on the course of the disease itself, being thus inferior to salicin, resorcin, and ichthyol. If given at all in fever, its action requires to be very carefully watched. In certain neuroses, however, Dr. Dulácska has found it very useful, and as the doses required were smaller, he is disposed to recommend its employment in such cases as it appears to be free from danger. In a case of severe trigeminal neuralgia, in which quinine, gelseminum, and morphine had produced but little improvement, 3 grains of acetanilide were given night and morning without effect; $7\frac{1}{2}$ grains were then ordered, divided into ten powders, one to be taken every two hours. This produced a great improvement, and after ten days of this treatment the cure was complete. No unpleasant effects beyond some nocturnal perspiration showed themselves. Two other cases, where severe pain was associated with meningo-myelitis and syphilitic tabes respectively, which had been treated in various ways unsuccessfully, were greatly benefited by acetanilide, no unpleasant effects being produced. Dr. Biro gave acetanilide in eighteen cases of various kinds, including typhoid, croupous pneumonia, pleurisy, polyarthritis, tuberculosis, and phthisis, in doses varying from $1\frac{1}{2}$ grains to 45 grains per diem, and was much struck with the uncertainty of its action, an effect being sometimes produced by a grain and a half, while at others ten or eleven grains had no effect at all. Most of the patients complained of chilliness, while cyanosis and irregularity of pulse occurred in several cases. In one case, where seven grains and a half had been taken, there was a severe rigor followed by cyanosis, sweating, and an irregular, thready pulse, the symptoms being so alarming that recourse was had to brandy and hypodermic injections of ether. In another case, in which acetanilide had been given for eleven days, similar symptoms presented themselves, together with clonic spasm of the lower extremities, reminding one of the symptoms in aniline poisoning. Altogether, Dr. Biro thinks that the evil effects of acetanilide are so great that it cannot be recommended for general adoption.—*The Lancet*, July 9, 1887.

*THE TREATMENT OF SEVERE CASES
OF BURNING BY THE HEBRA
WATER-BED.*

The method of treating burns by prolonged immersion in baths does not seem to be as thoroughly known as it undoubtedly deserves to be. The bed recommended by Hebra is simply a special form of bath, and is admirably adapted for treating not only cases of burns, but all diseases associated with loss of epidermis, such as extensive sloughing ulcers, erysipelas, and other diseases associated with severe pain. The entire absence of pain and apprehension on the part of the patient, associated with the removal of old dressings and application of fresh ones, is a marked and favorable element in treatment by the bath. The wounded surfaces are continually out of contact with the air, and, as they are not covered with any form of dressing, the discharges escape at once into the water, and the wounds are kept clean.

There is scarcely any limit to the time a patient may remain in the bath. Immersions have been prolonged as much as three hundred and eighty-five days and nights. In the *Edinburgh Medical Journal* for July, 1887, DR. W. J. LAWRIE gives the following description of the employment of Hebra's water-bed :

It consists of a zinc vessel, constructed in the framework of a bed. In the vessel an oblong iron frame is suspended by chains. The frame is so constructed that the portion where the patient's head is to lie may, by a hinge motion, be raised to an angle with the other part. The whole frame can be raised or lowered by means of toothed wheels. On the frame a thin mattress is laid ; the patient rests on the mattress. When the zinc vessel has been filled with water, the bed, carrying the patient, is gradually sunk beneath the surface, taking care, of course, to keep the head out of water.

At first the patient feels the water too hot, upon which it must be cooled. Feelings of rigor now set in, and additional warm water must be added. After this he feels most comfortable ; the pains have almost entirely disappeared.

The water-bed does not offer a remedy against the severe constitutional effects of all burns, nor against their fatal ending in all cases. Patients die of extensive burns under this treatment as under any other, but they die at least free from pain.

On the other hand, the continual bath is an effectual therapeutic agent, and a real benefit for patients and attendants during the long

period of suppuration. By the ordinary methods such patients cannot be kept in a state of perfect cleanliness, because the dressing of extensive burns requires much time. Lifting and turning, as well as separation of the adhering bandages, are most painful. Here fresh bleeding is induced, there retention and degeneration of the secretions occur, and fever is constantly maintained. There is continual dread of septicæmia, and constant nervous apprehension on the part of the patient at each dressing of the wounds. All of these disadvantages cease on the use of the water-bed. The patient lies and moves as he wishes, sleeps, eats, and employs himself according to his tastes. The wounds are always covered, always clean, and granulate normally, indeed often so luxuriantly that they must be repressed.

According to those indications, therefore, Hebra's water-bed is, from the beginning, the best agent against pain, and during the period of suppuration is the best therapeutic agent. Removal of scabs takes place earlier. Retention of pus is avoided. Danger of septicæmia and erysipelas is reduced to a minimum, fever ceases, sleep and appetite return, by means of which the organism is enabled to withstand the effects of severe suppuration. In a word, granulation and healing, with the absence of all subjective and objective accompaniments, are furthered to an extraordinary degree by the water-bed.

*TREATMENT OF ANAL FISSURE AND
HÆMORRHOIDS BY GRADUAL
DILATATION.*

Anal fissure, or irritable ulcer, according to statistics, ranks third in frequency among the diseases of the rectum, is found in the infant as well as in the octogenarian, and is due principally to the passage of hardened fæces through the sphincters. Although insignificant in character, it causes fully as much exquisite agony as any ill that human flesh is heir to. Very many simple fissures get well promptly, but where, by frequent mechanical irritation, they come to stay, it is then that beneficial treatment is desirable. Many cases will, however, refuse a radical operation, and for this reason DR. H. O. WALKER (*New York Medical Journal*, July 30, 1887) recommends the treatment of such cases by gradual dilatation. He was led to employ this process in a case which refused operation, and in which various forms of treatment by suppositories failed to produce relief. Dr. Walker

in this case introduced a bi-valved rectal speculum, slightly separating the blades, and allowing them to remain *in situ* for about two minutes. This procedure was continued daily, gradually increasing the dilatation at each sitting until the blades were separated to their fullest extent,—about two inches in diameter. This treatment was continued until there was an entire subsidence of all previous symptoms, with a full healing of the fissure and hæmorrhoidal tumors and disappearance of constipation; entire treatment lasting about five weeks. Dr. Walker likewise reports in detail four other cases taken from a record of upwards of fifty, which he has treated by this method, and which he considers are fair representatives of the character and results of the whole. In all of these cure was produced. In conclusion, he recommends the treatment of anal fissure and hæmorrhoids by gradual dilatation on the following grounds:—

1. It is almost painless, at least after the first two or three distentions.
2. It does not tear the parts, nor does it produce paresis, as occasionally occurs after forcible dilatation.
3. Neither does it leave cicatrices that are apt to produce stricture, as in the method of hypodermic injection or ligature of hæmorrhoids.

ANILINE CAMPHORATE.

Referring to the fact that the recent discovery of antipyretic properties in acetanilide ("antifebrin") has opened up a possible future in therapeutics for another group of compounds, aniline derivatives and salts, HERR VULPIUS points out that a compound of aniline and camphoric acid had previously been credited by Tomaselli with antispasmodic properties (*Pharm. Centralh.*, June 9, p. 283). This salt does not usually figure in trade-lists, but Hager, in his *Handbuch der Pharmaceutischen Praxis* (vol. i. p. 364), states that it can be prepared by dissolving fifty parts of camphoric acid ($C_{10}H_{16}O_4$) in one hundred and fifty parts of absolute alcohol, and adding to the solution fifty-six parts of aniline, or sufficient to produce a neutral liquid, which is then left to evaporate spontaneously in a dark place. The product so obtained is described as occurring in small white or reddish odorless prisms, having a pungent acrid taste, and easily soluble in water, alcohol, and ether. This formula is objected to by Herr Vulpius on the ground that excess of aniline is ordered, and that it

is difficult to ascertain the exact point of neutralization with ordinary indicators, paper stained with the violet coloring-matter of dahlia petals, which is colored green by aniline, being the most convenient. Moreover, he considers the use of alcohol as unnecessary, and liable to lead to discoloration during evaporation, even in the dark. He prefers to heat together in a closed vessel, at the temperature of a boiling water-bath, one hundred parts of finely powdered camphoric acid and ninety-three parts of aniline. The crystallization of the aniline camphorate is said to commence in a few minutes but to take some time to complete, though its progress is accelerated by contact with a wide surface of the containing vessel. Aniline camphorate— $(CHN)CHO$ —thus prepared, is said to dissolve in alcohol and ether, but not freely in water, of which it requires about thirty parts, and in its solubilities generally it approximates to aniline rather than to camphoric acid. Chloroform and carbon bisulphide appear to break up the compound, taking up the aniline and leaving a residue of camphoric acid; heated fat oils and oil of turpentine behave more or less similarly. Apart from alcoholic and ethereal solutions which are not adapted for hypodermic use, the best solvent for aniline camphorate is glycerin, which takes up one-tenth of its weight, and can then be diluted with an equal weight of water. The maximum single dose of aniline camphorate given by Tomaselli as an antispasmodic was .02 gramme, and the maximum quantity administered in one day .08 gramme, which was usually given dissolved in four volumes of ether or ether-alcohol, and inclosed in a gelatin-capsule.—*Pharmaceutical Journal and Transactions*, June 25, 1887.

THE TREATMENT OF NEURALGIA BY MEANS OF INTENSE COLD.

At a recent meeting of the American Neurological Association, Dr. JACOBY read a paper on this subject, in which he set forth the advantages attending the use of chloride of methyl and liquid carbonic acid (*New York Medical Journal*, July 30, 1887). His general impression was that we had in chloride of methyl a reliable analgesic which did not affect the general condition of the patient, and that it was invaluable in the treatment of neuralgia for the immediate relief of severe pain. It was used in the form of spray under high pressure. The objections to be overcome were the expense of the apparatus and

the difficulties of getting the drug. From his experience in the use of condensed carbonic acid, his conclusions were that, in the absence of chloride of methyl, it was able to take the place of that remedy in the treatment of sciatica; that the pain was relieved very promptly by it, but that its curative effect was not so great as that attributed to the chloride of methyl by other observers.

Dr. Edes and Dr. Dana had used rhigolene with benefit in the treatment of neuralgia, and so had Dr. Jacoby, but he had found it objectionable because of the less intense degree of cold produced, and also because it could not be applied to a sufficiently large surface.

TREATMENT OF DROPSY BY PERMANENT BATHS.

In the course of a paper (*Berl. Klin. Woch.*, 1887, No. 29) upon the use of permanent baths (at a temperature of about 95° F.), L. RIESS, after giving instances of their value in cases of spinal disease and injury, adduces some rather remarkable facts of their efficacy in the treatment of dropsy, whether cardiac or renal. These cases are often complicated with bed-sores, erysipelas, and gangrene, for which such treatment would be suitable, but he says that he long withheld it because of the idea that cardiac or pulmonary disease would be a contraindication to its employment. However, in 1879, in a case of extreme cardiac dropsy (mitral and aortic disease) with considerable erysipelas and cutaneous gangrene of the legs, he determined to try the effect of the permanent bath as a last resort, not without some misgiving lest the immersion should increase the dyspnoea and dropsy. The result proved quite the reverse, for a rapid improvement took place, and when, after having been in the bath a fortnight, the patient returned to bed, the dropsy and other severe symptoms had disappeared. Since then Riess has adopted the procedure in a large number of dropsical cases, and invariably with benefit, the dropsy in most cases (whether renal or cardiac) diminishing within the first forty-eight hours in a striking degree. The quantity of urine is not increased *pari passu*, so that it is suggested that the effect of the permanent bath is to increase the functional activity of the skin, which is contrary to the prevalent notion. The good results obtained in cases of chronic rheumatism so treated are also mentioned, and it is held that the application of the method is practically very sim-

ple, it being necessary of course to allow the patient to lie comfortably suspended in a hammock, and to place a thick woollen covering over the bath to retain heat as much as possible. At first it is well to allow the patient to leave the bath at night, but, as he gets more used to it, he may spend days and nights in it with much comfort both to himself and his attendants.—*The Lancet*, July 23, 1887.

NAPHTHOL IN THE TREATMENT OF ENURESIS.

DR. S. J. WRIGHT, of Tallmadge, O., writes to the *Medical Record*, July 30, 1887, as follows: "I had a case of enuresis, without cystitis or calculus or any pain, occurring in a neurotic lady 34 years old. The condition had existed since childhood. No relief had been found in local or general treatment. She had been obliged to rise many times every night for years. The quantity of urine passed each time was small, the total amount for the twenty-four hours being about three pints. A nervous cough had lasted a year in spite of treatment, and, fearing bacterial infection, I gave her a No. 2 capsule filled with naphthol, also using the drug in the form of a spray. The enuresis rapidly subsided during this treatment, although no change was visible in the appearance of the urine. A temporary cessation of the naphthol for a few days was promptly followed by a return of the enuresis, which again left on resuming the drug. She is now free from enuresis, and can sleep better than ever before. Her throat gives her no pain, her cough is nearly gone, and she can omit naphthol without a return of her enuresis."

COMMON ERRORS IN THE TREATMENT OF SKIN-DISEASES.

At a recent meeting of the Medico-Chirurgical Society of Montreal, DR. FOX read a paper on the "Common Errors in the Treatment of Skin-Diseases" (*The Canada Medical Record*, June, 1887). He said that the great error made by practitioners in treating skin-diseases was failure to treat the patient; the disease is treated, not the patient. It is most important that the patient have fresh air, wholesome food; in short, everything that tends to improve the general health. Special treatment of the disease is of no avail without improving the condition of the patient. He regarded attention to the diet as most important, and said there should be a radical

change both in the quantity and quality of the food; a strict course of diet should be given the patient; the majority of patients improve on starvation diet. He advised his patients to increase the quantity of fluids taken and decrease the solids; to eat less and exercise more. A change of diet almost invariably proves of value, the more radical the better; he gets the best therapeutical effects from a vegetable diet in the treatment of inflammatory skin-affections. A meat diet congests the skin; a vegetable diet relieves the congestion. He is in the habit of restricting the meat in winter and forbidding it in summer. In giving directions to a patient it is better to tell them what to eat than what to avoid. Water should be taken sparingly at meals, but in quantity between meals. In speaking of local applications, he said that very few are needed. If the disease be acute, soothing applications should be given; if chronic, stimulating ones. Infantile eczema is, as a rule, too much stimulated, and chronic eczema with infiltration too little stimulated. In treating psoriasis, chrysophanic acid is the best remedy, but even this remedy should not be used in every case, as it does positive injury where there are congestion and inflammation, but later, when the eruption becomes dry, it does good. In acne a tonic treatment is best. In speaking of local applications, the reader of the paper stated that when the substance is needed to be absorbed by the skin, then the animal fats should be used; when mere protection is wanted, then vegetable fats do very well. Vaseline has but little power of penetrating the skin. He then went on to speak of arsenic, which, he said, is used too much by the general practitioner in the treatment of skin-diseases, and which, as regards skin-diseases, would not be missed if abolished from the Pharmacopœia; he now rarely uses it. It is at best a much overrated remedy, and its indiscriminate use in skin-diseases is fraught with evil.

A NOVEL TREATMENT OF PLACENTA PRÆVIA.

DR. JOHN WINSLOW, of Ithaca, N. Y., writes to the *Medical Record* for July 30, 1887, as follows: "The interest lately shown by your correspondents in the subject of placenta prævia leads me to report a case whose treatment differed from any that I have seen described. Summoned in haste one night to a stout German primipara, I was at her bedside in less than five minutes after the mes-

senger had left it. The blood had already saturated the bed, made a pool under it, and flowed across the room. It was still pouring from the vagina, when, introducing the whole hand, I found the os about the size of a half-dollar, with the presenting placenta so firmly adherent all around that it could nowhere be detached, and too thick and firm to be penetrated by the finger. So, to check the hemorrhage, I closely applied the palm over the os (with the fingers in the posterior cul-de-sac, as the patient lay supine), while the external hand over the foetal breech strongly held the head against the placenta, the lowest part of which was thus firmly compressed. Hemorrhage was impossible, and not another ounce of blood was lost until, after four fatiguing hours of this steady pressure, the os had so far dilated as to allow one edge of the placenta to slip out, forced down by the head, which now of itself compressed the attached portion against the pelvic wall. Delivery was spontaneous and speedy; and the large, thick after-birth showed near its centre a circle some four inches in diameter much thinned and completely blanched. Both mother and child did well."

A NEW TREATMENT FOR OBSTINATELY RECURRING ECZEMA.

When the diathetic or other defect of health upon which most cases of eczema depend is duly met by general and medicinal measures, and the local applications are adapted to the stage and degree of inflammation, while the denuded surface is protected from the irritating influences of air and water, the vast majority of cases get well; but, in a certain number, just when we think that we have conducted the patient safely through the attack, a fresh outbreak occurs and we have to begin again, and this over and over again until the resources of the medical men and the patience of the sufferer are wellnigh exhausted.

In the *British Medical Journal* for July 9, 1887, DR. RADCLIFFE CROCKER proposes a means of treating these disheartening cases, which he believes will bring relief in the majority of instances. He was first induced to try this treatment in the case of a man, aged 56, who had had eczema on the hands and face, and had been incapacitated for work for three years. Various kinds of treatment were tried, both internal and external; but, although temporary improvement was obtained so that the discharges and hyperæmia diminished and he seemed to be getting well,

in a few days the eruption came out again as badly as ever, chiefly on the face and arms. Dr. Crocker came to the conclusion that it must be due to a vaso-motor neurosis, and that if he could get at the vaso-motor centre he might do some good.

Without in any way altering the treatment previously employed, he painted liquor epispasticus on the nape of the neck.

Owing to the thick scales the blister did not take, and it was repeated after cleaning the surface, and a good blister formed; a fresh acute attack was just threatening, but it did not come on, and the patient felt better. Three days later, the part having healed, the blister was repeated, and there was evident improvement after it; the scales were less, and the irritation was much relieved. The patient continued to improve, but, the rash threatening again, another blister was produced. This, however, did not stop the rash, which came out freely, but the itching was much less than usual, and the eruption lasted but a short time, and from that time he continued to improve and went out almost well, and was able to go to work for five months, but, having to keep his hands much in water, it then returned.

Encouraged by this result in a very unpromising case, he has extended this line of treatment, but using milder counter-irritants, such as mustard-plasters or mustard-leaves, instead of blisters, which are unnecessarily severe. Dr. Crocker reports several cases in which counter-irritation has been employed with the same results. The position of the counter-irritants should vary according to the region affected. Thus, for the face alone, it is placed behind the ears; for face and fore-arms, on the nape; about the genitals or legs, over the lumbar enlargement; and, if one leg only is affected, on the hip over the large sciatic nerve.

The result has been more or less beneficial in the great majority of cases. It has seldom failed to relieve the itching, and generally procured sleep, at least on the night of application, and often the alleviation has lasted for several nights. In many cases the redness and swelling have also subsided sometimes entirely, sometimes in great measure, and generally enough to make it more amenable to local treatment than it was before.

One advantage of this method is that it does not interfere in any way with other treatment, whether internal or external, and that it is safe; but, inasmuch as there is a natural shrinking from irritants on the part of

an eczema patient, it may be more prudent in some cases to begin with dry heat, such as a hot tile wrapped in flannel, and, if sufficient relief is not obtained, to go on to stronger applications.

SUBIODIDE OF BISMUTH AS A SUBSTITUTE FOR IODOFORM.

It is generally conceded that iodoform stands in the front rank of antiseptics and as a surgical dressing for various diseased conditions. Its use is nevertheless attended by a number of serious drawbacks.

An article which Dr. CHASSAIGNAC (*New Orleans Medical and Surgical Journal*, July, 1887) believes to be a good substitute for iodoform is the subiodide of bismuth, which was used some ten years ago by Dr. A. S. Reynolds, who found it very efficacious, but was not generally adopted at the time on account of its high cost.

Subiodide of bismuth is of a bright brick-red color, impalpable when well powdered, almost odorless and tasteless, insoluble in water, alcohol, ether, or chloroform. It does not stain or impart its color to linen, and is easily washed out. It can be made by different processes, but we will only quote from the *American Journal of Pharmacy* one devised by Jos. W. England, Ph.G., and recommended by him, in an article on the subject, as "practicable in general employment."

R Bismuth. subnit., ℥iiss, gr. xxiv;
Nitric acid, ℥iiss;
Hot water, ℥xii;
Potassium iodide, ℥xi, gr. iii;
Hot water, ℥xxviii.

Dissolve the bismuth salt in the acid in a porcelain capsule with the aid of heat, and add twelve fluidounces of boiling water in small portions at a time, stirring after each addition; then pour the bismuth solution in the hot water, in which has been dissolved the iodide, agitating it well after each addition. Continue agitating until decomposition is complete. Filter at once. Wash the precipitate with warm water. Dry and powder.

When subiodide of bismuth is dusted on a raw surface it produces over the latter a thin silvery film, somewhat analogous to that caused by lunar caustic when lightly applied, but much more faint. However, it imparts no stinging sensation, as this fact might suggest, but seems to have an anæsthetic effect similar to that of iodoform. It has a marked healing effect upon chancres, as well as chancreoids. Dusted over wounds, whether accidental or made by the surgeon's knife, it acts as an antiseptic, diminishes the secretion of pus, and seems materially to hasten cicatriza-

tion. It is a good deodorant, for Dr. Chas-saignac has applied it to chronic and foul ulcers of the leg, which, with ordinary application, required dressing daily or every other day, and with this could remain a week almost without being touched, and then be found without bad odor, having suppurated very little and granulated magnificently.

Its present price is now much less than iodoform, the latter selling at about five dollars a pound, while the subiodide of bismuth may be made so as to cost from three to three and a half dollars a pound.

A SIMPLE METHOD FOR ASSISTING DEGLUTITION IN ULCERATION OF THE EPIGLOTTIS.

One of the most distressing symptoms accompanying laryngeal phthisis with ulceration of the epiglottis is the difficulty patients experience in swallowing. Especially is this the case in advanced conditions where the epiglottis is more or less completely destroyed. In such circumstances the swallowing of even a teaspoonful of water, or liquid of any kind, is all but impossible, from the violent cough that is excited in consequence of the passage of some of the fluid into the larynx and trachea. Such patients are generally tormented with a thirst which they cannot satisfy, and the painful efforts they make to get down a few drops of liquid, and the terrible spasms of coughing and pain thereby produced, are truly pitiable to observe.

In the *Lancet* for July 2, 1887, Dr. R. NORRIS WOLFENDEN refers to a method of drinking large quantities of fluid with ease, even when the epiglottis has more than half disappeared from ulceration. The plan was suggested to him by a patient of his, who informed him that thinking of how boys are in the habit of drinking water from a running brook, by lying down upon the bank and putting the mouth to the water, determined him to adopt a similar position himself, and found by making use of a piece of india-rubber tubing that while lying stomach downwards, and with the feet higher than the rest of the body, and putting the piece of rubber tubing in the water, he was able to drink a large tumblerful without stopping and with the greatest ease and comfort, although in the ordinary position a teaspoonful of fluid was as much as he could manage to get down, and this was accomplished only at the cost of much pain and terrible paroxysms of coughing.

The plan is simple enough, and Dr. Wolfenden recommends it as an excellent method for alleviating one of the most distressing symptoms in patients suffering from such laryngeal conditions.

THE TREATMENT OF OBSTINATE CASES OF FLEXIONS OF THE UTERUS.

In a paper read before the British Gynecological Society, Dr. C. H. S. ROUTH came to the following conclusions on the treatment of flexions (*Medical Press*, July 6, 1887):

1. Where ordinary Hodge pessaries are used,—(a) No pessaries whatever should be used, until such time as all inflammatory or congestive symptoms have been removed, and this is a *sine quâ non* in all cases when the fundus uteri is tender or inflamed. (b) Particular care should be taken to insure an exact fit of such pessary to the affected person to prevent pressure on the fundus or bent angle of the flexed uterus. It should be removed for cleansing purposes, etc., every three or four months for a few days, but again replaced,—kept in for a year. A shorter period could never, or very rarely, cure.

2. In regard to intra-uterine stems,—(a) Whenever the canal is narrowed or obstructed at the point of flexion, an intra-uterine stem is essential. In no case, however, should it be allowed to press against or even touch the fundus. (b) Where the flexion is not very marked, the india-rubber stem may be used. If the flexion be great, it is best to support it by a buckle pessary, and an internal stem again within it. In such cases, however, the solid diverging stem or buckle pessary are preferable. (c) If the adhesions which force the uterus in a flexed position be strong, the india-rubber steel spring intra-uterine stem should be first tried. If the adhesions be too strong, oöphorraphy affords the only chance of cure. (d) Intra-uterine stems, whether with or without buckle pessary, should be kept in for six or eight months. (e) In cases of great subinvolution of the uterus, the stem should be thicker than in ordinary cases, and especially so if the flexion be very marked. (f) Neither suspension of the uterus nor shortening of the round ligaments should be practised in cases of great uterine enlargements or prolapse. The same objections hold in cases of firm and extensive adhesions, and great debility and relaxation of the ligaments. (g) In all cases with marked prolapse the buckle pessary is the safest. (h) If, after full trial of instruments, they either fail or produce great pain and inflammation, then Dr. Alexander's

operation may be tried, and failing that, Dr. Heywood Smith's or Dr. Imlach's, except only in the exceptional cases before mentioned.

THE TREATMENT OF LUPUS BY INJECTIONS OF CORROSIVE SUBLIMATE.

DR. IGINIO TANSINI, of Lodi (*Gazzeta degli Ospetali*, June 12), narrates the treatment of a case of lupus of the nose and face by means of repeated injections of corrosive sublimate. He began with a weak solution,—corrosive sublimate, 50 centigrammes; distilled water, 100 grammes. This produced no reaction of any kind. A stronger solution—corrosive sublimate, 1 gramme; distilled water, 100 grammes—was then used. This produced some tumefaction and œdema in the neighborhood of the punctures, and slight suppuration in some of them. Some fourteen or fifteen injections of a few drops were practised. Improvement soon became marked, and eventually all traces of the disease disappeared, the only marks left being those of the punctures in which suppuration had taken place. Dr. Tansini was led to try these injections by the following considerations: 1. That lupus is a form of tubercle. 2. That the bacilli are few, and have no tendency to diffuse themselves. 3. That corrosive sublimate has proved certainly destructive to bacilli. He claims advantages for this method on account of lessened pain and disturbance and superior cosmetic results. —*The Lancet*, July 9, 1887.

THE MANAGEMENT OF FÆCAL RETENTION UNCONNECTED WITH ORGANIC DISEASE.

♦ The following is a summary of an elaborate paper by DR. GEORGE DALTON HAYS, published in the *New York Medical Journal* for May 21, 1887:

In acute constipation the best remedies are clysters, salines, and castor oil; in those forms denominated "bilious," lavage, emetics, and abstinence, and the use of cholagogues. Impaction of the colon results from causes of a chronic nature, but is apt to develop acute symptoms. Our chief reliance here rests upon intestinal irrigation. This should be employed in the manner indicated. In chronic constipation a thorough trial of all the hygienic and mechanical aids should precede the use of drugs, and, where recourse to the latter has eventually to be made, such aids are always to supplement all other forms of treatment.

Medicines having a curative tendency should always be chosen in preference to those which merely relieve the symptoms. Enemata are also of great value here. Aloes, rhubarb, belladonna, strychnine, cascara, ipecac, physostigmine, ergot, and the occasional use of the salines are the most efficient remedies of this class. Various combinations and alterations of these produce effects not otherwise attainable, but it is essential to bear in mind that our remedies should be directed to the cause and not to its effect. In constipation of a chronic nature large fæcal accumulations may occur at any time, and no examination of a patient is complete which does not include a careful exploration of the colon through the abdominal walls.

CATHA EDULIS.

The use to which the leaves of *Catha edulis* are applied by the Arabs, and the accounts which have been given of their stimulating effects, naturally suggest the probability that they may resemble, in containing caffeine, the vegetable products that are used for similar purposes, such as coffee or tea, or, perhaps, have some resemblance to cocoa-leaves. A small quantity of the leaves of this plant, which are known in Arabia by the name of Gat or Kat, have been subjected to examination by DR. B. H. PAUL, who published his results in the *Pharmaceutical Journal and Transactions* for June 11, 1887.

On digesting the leaves with ether a very dark-colored tincture was obtained, of a deep bluish-green color by transmitted light when in a thin layer, and in larger masses brownish-red. By evaporating off the ether a very dark-green, waxy residue was left that was only partially soluble in alcohol. This appeared to consist chiefly of chlorophyll mixed with a waxy substance, and, after precipitating the chlorophyll from the alcoholic solution by lime, the filtrate gave no indications of the presence of caffeine.

The leaves, after having been treated with ether, were digested for some time with strong alcohol at a moderate heat, and on evaporating the clear tincture about ten per cent. of a dark-colored aromatic extract was obtained, for the most part soluble in water. The water-solution of it contained a considerable proportion of substance which formed a yellow precipitate with acetate of lead, and after that had been separated the clear liquor left, on evaporation, a brown, syrupy residue.

Treatment of this residue with chloroform failed to extract from it any caffeine, even after the addition of ammonia.

If the leaves had contained caffeine indications of its presence should have been obtained either in the ethereal or the alcoholic extract, and consequently it may be inferred that the leaves do not contain this substance. So far as he is able to judge from the results of his examination, Dr. Paul is disposed to think that the stimulating effects attributed to the leaves when chewed may be due to ethereal oil or some other aromatic and volatile constituent, but to determine this point a larger supply of the leaves would be required. One point to which reference may be made in a general way is the presence of a form of tannic acid in the leaves of *Catha edulis* closely analogous to that met with in tea, coffee, maté, and coca-leaves. It is, indeed, possible that the physiological action of these articles of food may be, in some measure, due to the astringent substances they contain, as well as to the presence of caffeine, theobromine, or cocaine; and, from this point of view, the further examination of those different analogues of tannic acid may be worth attention.

THE CAUSE AND TREATMENT OF FUNCTIONAL INSOMNIA.

At a recent meeting of the New York Neurological Society Dr. B. SACHS (*New York Medical Journal*, May 21, 1887) read a paper on the above subject. Under the term he included cases of insomnia, pure and simple, occurring in persons of the neurasthenic habit. He preferred to say neurasthenic rather than hysterical, for in his experience actual insomnia was less frequent in truly hysterical patients than in those suffering from cerebral or spinal neurasthenia. A number of typical cases were cited. The author thought that in the majority of such cases there was good evidence of disturbances in the cerebral circulation. As it had been found in animals that an increased activity of the cerebral circulation was accompanied by a deficient circulation in the peripheral parts, so in many cases of chronic insomnia cold extremities, pallor of the skin, and a scanty uterine flow pointed to deficient peripheral circulation, and in many of these cases there was weakness of the heart, with a weak pulse. Special attention was called to the simultaneous occurrence of insomnia and headache, and to the fact that as a rule the headache was of the paralytic migraine type.

The treatment of migraine and that of insomnia were similar in many respects. The author wished particularly to insist on the point that continued hypnotic medication was worse than useless. The good results obtained by him had been due to close attention to matters of general regimen, to the treatment of anæmia, and to the strengthening of the force of the heart's action by cold douches, by the regulation of exercise, and by the methodical performance of definite forms of active physical exercise, such as riding, rowing, and mountain climbing. Hypnotics were of use only at the outset of treatment; among these the reader mentioned chloral and bromides, to be given at night, or bromides alone, amorphous hyoscyamine, urethan, and paraldehyde. Their use should be discontinued as soon as a slight improvement was noticeable, and from that time onward general treatment was to be pushed vigorously.

THE ANTAGONISM BETWEEN MORPHINE AND ATROPINE.

In the *Deutsches Archiv für Klinische Medizin*, 40 Band, 5 u. 6 Heft, LENHARTZ, of Leipzig, contributes an exhaustive paper upon this subject, which we summarize as follows:

He was led by the symptoms in three fatal cases of opium-poisoning to question whether the result was caused by morphine alone or by the combined effect of the atropine given as an antidote with the morphine. He has collected one hundred and thirty-two cases of opium-poisoning, of which fifty-nine were treated by some preparation of belladonna, generally atropine; of these seventeen died,—a mortality of 28.8 per cent. He also reports seventy-three cases which were treated without any preparation of belladonna, the treatment being generally stimulants, and the use of compresses and baths of cold water. Of these cases only eleven died,—a mortality of fifteen per cent. The injurious effect of atropine is most frequently exercised upon the heart, whose action is depressed by the opium-poisoning, and still more by its antidote. It is on this account that the author advises against the use of atropine as an antagonist to opium. His conclusions he has stated as follows:

The physiological antagonism between atropine and morphine is not established by a single authentic observation.

The use of atropine is not to be considered a means from which even an improvement in

the symptoms of opium-poisoning may be expected.

The principle of antidoting a poison by the use of another poison like atropine results in unreliable dosage, which has been productive of great injury.

The circumstance that cures have followed the use of atropine does not prove the positive value of the method.

The prognosis of opium-poisoning depends upon the use or neglect of a rational, non-antidotal system of treatment.

The careful comparison of the mortality of the two methods shows that the mortality after the treatment by stimulants and without atropine is less than that with other methods. An analysis of the cases from which these conclusions are drawn gives the following facts:

We have seen that of the first group of fifty-nine cases seventeen died,—28.8 per cent. Of the seventy-three cases of the second group, eleven, or fifteen per cent., died. Of the first seventeen cases eleven were from opium and six from morphine; of the second eleven, six died of opium and five of morphine. Among the first fifty-nine, five were children up to eleven and one-half years, and one of these died; of the seventy-three of the second group seventeen were children, and of these two died.

The doses which were poisonous varied as follows: A boy, 4 years old, died after taking 1 drachm of tinct. opii. A little child died after taking 2 teaspoonfuls of another opium preparation. With adults, from $\frac{1}{3}$ to $\frac{1}{2}$ grain of morphine, and 2 drachms of opium preparation, were the smallest fatal doses; while $6\frac{1}{2}$ drachms of morphine and 10 drachms of laudanum were the largest poisonous doses taken. The pulse was accelerated in fifty-six cases, and in two-thirds of all cases was full, or moderately full; in twenty-five cases it was normal, or but little changed; in nineteen it was very weak. Respiration was twelve times quickened; in twenty-seven times it was stertorous; in twenty-two cases the breathing was much slower than normal; it was rarely normal. Spasm was observed in thirty-eight out of the one hundred and thirty-two cases. Convulsions,—trismus, opisthotonus, and general convulsions were observed in thirty cases,—22.7 per cent.,—and in twelve of the fatal cases. These convulsions occurred in twelve cases of morphine-poisoning, one of which was a child; they occurred in eighteen cases of opium-poisoning, of which four were children. Convulsive seizures of mild grade were ob-

served in two cases of morphine-poisoning and six cases of opium-poisoning.

In eighty-six cases contracted pupils were observed, without reaction, in all 91.3 per cent.; dilated pupils were seen in six cases,—6.5 per cent.; the mydriasis was reported in three instances, several hours after the poisoning was diagnosed!

From these observations he concludes that the condition of the pulse in opium-poisoning is one often changing; acceleration is most often present; less frequently weakness and irregularity. Respiration is generally retarded; changing respiration, somewhat accelerated, is not uncommon. Convulsions are more common than generally supposed; they generally occur among adults. The condition of the pupil agrees with the statement of Orfila, that in nineteen out of twenty cases contracted pupils were present.

In conclusion the author remarks regarding the experiments of Binz and Henbach, that the doses of opium which they gave to the dogs used in their experiments were not sufficient to bring the animals into as dangerous a condition as are human beings when they are poisoned. Atropine, as an antidote for such experiments, has not the effect which causes us to recommend its employment with the human subject. Moreover, the lessened arterial tension which these authors observed was not a source of danger for the animals; the cause of death being the convulsions, which resembled those caused by strychnine, and which caused the animal's death, in spite of the use of atropine.

A SIMPLE MODE OF PREPARING TAMPONS.

DR. N. W. CADY, of Logansport, Ind., writes to the *New York Medical Record* for July 16, as follows: "Some time since I hit upon a handy method of preparing tampons. When made in the ordinary way, tampons are usually not firm enough, and the knots tied in the retaining string often produce pain, or even slight ulceration. The implement which I use in preparing them is a bit of wire twelve inches long, ending in a loop or hook. A piece of strong linen thread is doubled, and then looped over the hook, the ends being secured at the other end of the wire by two or three half-hitches. Cotton, oakum, jute, or wool is now wound firmly around the wire and thread until the roll is from four to five and one-half inches long, and from one-half to three-

fourths, or seven-eighths of an inch in diameter. The thread is now released from the wire loop, and the wire withdrawn, leaving the thread in the centre of the roll. The roll is then formed into a ring by tying the ends of the thread together firmly. Making the roll two and one-half inches or less, and correspondingly thicker, a conical tampon may be made. Oakum or jute answers very well for the interior of the roll, but I prefer cotton for the outside."

TINCTURE OF SIEGESBECKIA ORIENTALIS IN RINGWORM.

Of the drugs now generally prescribed in the treatment of tinea in its several varieties, some are exhibited in the form of ointments, and ointments are always more or less disagreeable to use; others free from greasy annoyances give the patient more or less pain in the application. In the *British Medical Journal* for June 25, 1887, Dr. J. HUTCHISON refers to a preparation which he has been using for some time, and which is devoid of both these drawbacks, and is at the same time a speedy and reliable means of curing the disease.

Dr. Hutchison has used it in fifteen cases of ringworm; of these, eight were cases of tinea circinata, four of tinea sycosis, two of tinea tonsurans, and one of tinea versicolor. The site of the eight cases of tinea circinata was in six of them upon the neck, and in two upon the calf of the leg. None of the patients called upon me till the disease was well developed, when the red, raised, circular, bounding edge, and the pale central area with its branny desquamation, left little doubt of the diagnosis. The four patients who were afflicted with tinea sycosis all blamed a "foul shave" for their ailment. In all of them the disease was upon the chin, and presented the characteristic fig-like appearance. The two cases of tinea tonsurans showed the roundness of the diseased patches, the scaly eruption, and the brittleness of the hairs peculiar to that form of the trouble. The one case of tinea versicolor was also typical.

His prescription in all of them was the same, namely, equal parts of tincture of siegesbeckia and glycerin, and this he ordered to be well rubbed into the affected area night and morning. The drug appears to act both as a stimulant and a parasiticide, and the method of cure was for the diseased patch to become broken up into a number of smaller

patches, with sound skin intervening. These smaller patches became again broken up till they disappeared altogether, and in their place was left a red blush, as if the part had been struck a smart tap with a cane. This redness, however, only remained for a day or two. The two cases of tinea tonsurans were the most stubborn to give way, but even in their cases more frequent applications, and continuing the treatment over a longer period, brought about the result desired, and that, too, without resorting to epilation.

SOME OLD-TIME PRESCRIPTIONS.

In the *Medical and Surgical Reporter* for July 9, 1887, Dr. HARRISON ALLEN calls attention to a number of classical prescriptions which seem to be in danger of being forgotten. The first of these was published in Dr. Chambers's lectures in London, 1865, and is as follows:

℞ Tincturæ ferri sesquichloridi, ℥ii;
Strychninæ hydrochloratis, gr. ss;
Tincturæ digitalis, ℥i;
Misturæ camphor., ℥x.
Fiat mistura.

Sig.—Two tablespoonfuls twice daily.

Dr. Chambers states that he administered an ounce of the mixture twice a day, in a case of anæmia in which the eyeballs were prominent, and he dwells upon the significance of this form of anæmia seen in young women in whom there is excitement of the heart's action, retarded development of the sexual functions, and enlargement of the thyroid gland. This combination appears to act most happily in this condition. The iron is adapted to the anæmic condition, the strychnine is a tonic to the small blood-vessels and to the central nervous system, the digitalis is a heart-tonic, and the camphor is an antispasmodic. The remedy does not interfere with digestion. With watchfulness and care its use can be persisted in indefinitely. It is not necessary that all the symptoms included in the above category should be present in order that this remedy may prove efficacious. The recognition of a retarded state of development of the ovaries and associated organs, absence of the secondary sexual characters, anæmia, and a thyroid engorgement are sufficient.

A second formula, perhaps not as elegant as the foregoing, is the following:

R Hydrarg. bichlor., gr. iv;
Solve in spirit. rectific., ℥ii;
Decot. cinchonæ, ℥ii;
Mel rosæ,
Tinct. myrrhæ, aa ℥ii. M.
Et ft. gargarisma.

This prescription appears in the Institute of Surgery of Sir Charles Bell, and it would seem difficult to improve upon this formula for a mercurial wash for the ulcerated forms of syphilitic sore throat.

In prescribing it the patient should be directed to use a small quantity at a time, and to note its effects. If it prove to be too severe, he should add an equal quantity of water to each dose, which might be limited to a table-spoonful. If this prove to be irritating, it may be again diluted, until at last it can be easily borne. The patient should be encouraged to use the remedy as far as practicable in the form above given. If he is compelled to begin with the dilutions, he can be induced, after he is in a measure accustomed to the effects, gradually to return to the original strength of the remedy.

In employing an astringent for a gargle an admirable method employed by our seniors was, instead of using pure tannic acid, to introduce a native astringent substance known to contain the acid. As an example of this form, Dr. Allen gives a prescription known in Philadelphia as "Goddard's Gargle," as first introduced by Dr. Paul B. Goddard, and frequently prescribed by the late Dr. Francis Gurney Smith. It is as follows:

R Aluminis, ℥ii;
Cort. granati, ℥ss;
Petal rosæ rub., ℥i;
Mellis, ℥i;
Aquæ bull., ℥vi. M.

The mixture can be used without dilution, or with an equal quantity of water. It appears to present all the features required by an astringent wash to the throat. If increased strength is demanded it is better to direct an agent to be employed topically by the attending physician.

Another preparation, the uses of which can be made to subserve a great number of indications, is Fowler's solution of arsenic. Small doses of this preparation, say 2 or 3 drops twice a day for a period varying from one to six months, produce most gratifying results in those states of impaired health which appear to be due to an inheritance of a phase of malnutrition, and which is so evasive that it is difficult to give it a distinctive name.

Local diseases engrafted on such a condition will often resist remedies until arsenic, in the form of liquor potassæ arsenitis, is employed. Pharyngitis sicca, atrophic nasal catarrh, anæmia accompanying tertiary syphilis, are sometimes greatly improved, indeed to a degree far greater than it has been possible with any other agents, by these small doses of Fowler's solution.

HYDROSTATIC PRESSURE IN INVERSION OF THE UTERUS.

PROFESSOR MAX RUNGE, of Dorpat, having a case of inversion of the uterus, caused by a midwife pulling on the cord, which had been allowed to remain without medical advice for nine weeks, made several fruitless endeavors to effect reduction by manipulation and by distention of the vagina, by means of Braun's colpeurynter, which consists merely of an india-rubber ball with thin walls, provided, like Barnes's bags, with a tube and stop-cock. He then bethought himself of a plan recommended and practised successfully by Krukenberg,—viz., the application of considerable hydrostatic pressure to the vaginal canal, with the view of dilating the os uteri and of softening the inverted uterus itself. Professor Max Runge sprinkled the colpeurynter well with iodoform, and again introduced it, connecting it with a vessel of water hung at the height of about three feet eight inches above the bed. Communication between the colpeurynter and the water-vessel was kept open, the stop-cock not being turned off, and so a high degree of hydrostatic pressure was continually exerted, distending the vagina and the os and compressing the body of the uterus. Next morning the pain caused by the apparatus became unendurable, and the patient pulled it away from her. Upon examination, it was found that the fundus had retreated within the os, which was widely distended; there was still, however, a partial inversion, which was readily reduced with the finger. The uterine cavity was then washed out with a carbolic solution, and a tampon of iodoform wool introduced into it. The mucous membrane of the vagina showing signs of sloughing, it was well powdered with iodoform; ergot was also given. The parts were carefully dressed for some days, and the patient made a rapid recovery.—*The Lancet*, June 25, 1887.

A NEW THEORY OF RESPIRATION.

According to the Vienna correspondent of the *New York Medical Journal*, July 9, 1887, at a recent meeting of the Imperial-Royal Society of Physicians, PROFESSOR VON FLESCHL propounded a new theory of respiration, of which the following are the chief features. He had sought to ascertain the utility of the heart-beat. It would be most unreasonable, he said, to have such a motor force as that of the heart simply to drive the blood mechanically into the vascular system,—that work could be much better done by a gradually increasing *vis a tergo*, and the heart-beat was dangerous to life by the consequent variations in the blood-pressure. Why did so many persons die of apoplexy? Because of the great oscillations of the blood-pressure caused by the action of the heart. The heart-beat must, therefore, have another purpose than the merely mechanical act of keeping up the circulation. Referring to the familiar fact of the sudden setting free of chemical constituents as the effect of concussion, the speaker remarked that he had shown on a previous occasion that it was the beat of the heart that set carbonic acid free in the right ventricle. Now, oxyhæmoglobin was of such a stable constitution that the affinity of the tissues for oxygen was too feeble to enable them to withdraw it from the combination. But the blood, charged with oxyhæmoglobin, was subjected to energetic agitation in the left ventricle, and the oxygen was set free in the same way that carbonic acid was set free by the action of the right ventricle; the blood of the left ventricle no longer contained oxyhæmoglobin, but free oxygen. In the first volume of his "*Archiv*" Pflüger had discussed the mechanical influence to which the blood was subjected in the heart, and had described the agitation which it sustained there, but he had not emphasized this phase of it, and had considered the change of surface as the chief feature. The speaker remarked that it would be a mistake to suppose that the blood that came out by the aorta was the same that had been carried to the heart by the pulmonary veins. Both the hæmoglobin and the tissues had a certain affinity for oxygen, and the purpose of the heart-beat was to settle the matter in favor of the tissues. To sustain his theory, the speaker mentioned the following facts: The oxygen could not be set free from a solution of oxyhæmoglobin, at a temperature of from 0° to 10° Celsius, unless the solution was shaken energetically; agitation with a spoon was not sufficient, but it must be subjected to repeated and decided

shocks. Pflüger had known this fact, but he had not given it the correct interpretation. Approximately, one-third of the whole weight of the liver consisted of blood, the rest being parenchyma. Why, with the organ inundated with blood to this extent, was the hepatic artery so small in comparison with the size of the portal vein? Why did the tissue of the liver become necrosed when the hepatic artery was tied? These matters were explained by the speaker's theory. The blood of the hepatic artery contained free oxygen, whereas the oxygen of the blood of the portal vein, although it surpassed the other many times in quantity, was so combined with hæmoglobin that it could be of no use to the liver. It was known from the experiments of Claude Bernard, Stricker, and Albert that the blood of the left ventricle was cooler than that of the right ventricle by some tenths of a degree. This had been explained by the suggestion that the blood circulating through the lungs lost a part of its heat by evaporation and by contact with the inspired air. Heidenhain, however, had shown that this theory was not correct. He had caused animals to inhale air that had previously been heated and supersaturated with aqueous vapor, but nevertheless there was a difference in the temperature of the blood in the two ventricles. The speaker's theory gave the key to the true explanation. It was known that heat was evolved in every instance of oxygenation. In the lungs the blood still held its third part of oxygen in combination, and it was for this reason that it was warmer than the blood of the right ventricle. As to the left ventricle, cooling was due to the freeing of oxygen from its combination. In the aorta no considerable reoxygenation took place, for the blood coursing through that vessel still felt the force of the cardiac agitation, and it was interesting to note that the blood there was still cooler, by two-tenths of a degree, than that of the left ventricle. The speaker illustrated his theory with several further facts, and said that he would give the full details in a work to be published in October.

HOW TO GIVE INJECTIONS OF ERGOTINE.

In the *Centralblatt für Gynäkologie*, No. 28, 1887, BUMM describes the technique of injecting ergotine, which we condense, as follows:

Regarding the choice of a location for the injection, the writer is strongly opposed to the integument of the abdomen, which is so often chosen. He considers it an entirely

improper selection, and expresses his strong preference for the nates, where experience has shown that mercurials can be most conveniently injected. The solution must be injected directly into the muscles, and to accomplish this the needle should be introduced perpendicularly to the skin, and as deeply as its length will allow. Intramuscular injections are entirely absorbed twelve hours after injection, while subcutaneous injections are retained much longer. The choice of a proper solution is important. The fluid should be perfectly clear and liquid. It has been found that the greater part of the burning pain, of which patients often complain after these injections, is caused by the strongly acid reaction of the extract of ergot used. When this acidity is neutralized the virtue of the drug is unfortunately much impaired. A good preparation for injection should remain clear when almost neutralized by soda solution, not when the reaction is made alkaline. From his observations upon patients the writer concludes that the effect of the drug is not lessened by making the solution neutral. A second cause of the pain produced by injections is the strength of the solutions employed. A solution, 1 part of ergotine to 5 of water, is often recommended. The writer believes that solutions of five or ten per cent. are of more utility, and that in emergencies, when prompt action is demanded, two or three simultaneous injections of weaker solutions are better. The further advantage obtains that a dilute solution, distributed over a wider area, will be absorbed much more readily than a more concentrated solution retained in a smaller space. When a watery solution of from five to ten per cent. of a pure specimen of ergot is neutralized by soda, filtered until clear, and injected deeply into the nates, almost no after-effects are produced. A very trifling sensitiveness for a half or a whole day, with a little redness and swelling, is the most observed. The advantages of the nates over the skin of the abdomen as a place of injection are so great that the writer is positive in his recommendation.

USEFUL APPLICATIONS FOR INSECT-BITES.

BERNBECK has written a laborious essay upon this frequent and often insignificant ill, and proposes the following as the best applications which are known to him :

Elastic collodion, 10 parts ;
Salicylic acid, 1 part.

Also

Elastic collodion, 1000 parts ;
Bichlorid. hydrarg., 1 part.

To be used as soon as possible after a bite.

—*Pharmaceutische Post*, July 10, 1887.

THE PHYSIOLOGICAL EFFECTS OF COCAINE.

The above is the title of an elaborate paper by Mosso, of Turin, published in the *Archiv für Experimentelle Pathologie und Pharmacologie*, Band 23, Heft 3 u. 4, which we abstract as follows :

His first experiments were made with frogs, to test the effect of the drug upon the nervous system of cold-blooded animals. He found that in large doses cocaine paralyzed the spinal cord, while the motor and sensory nerves, in their peripheral portions, were yet intact. The conducting power of the cord was in abeyance, and the reflexes, as well as the other functions of the nerve-cells of the cord, were for the time abolished. Only in the last stages of poisoning by cocaine was increased irritability of the motor nerves observed. The lymphatic heart of the frog was of course paralyzed by the paralysis of the spinal cord. Regarding the general effect of cocaine upon warm-blooded animals, he observed that animals of the same kind differed greatly in their power to bear large doses of the drug. He found that in its effect upon the general nervous system the convulsions which it caused were not exaggerated reflexes, because they did not depend upon external causes. They originated in the nerve-centres from a temporary malnutrition, and spread through the muscles. It did not produce convulsions in cold-blooded animals. Death sometimes took place, with the symptoms of tetanus ; at other times, with a general paralysis, without especial convulsions. When the spinal cord was severed it was found that the cord alone, without the aid of the brain or the medulla, could excite strong convulsions of the muscles of the extremities, which exactly resembled the convulsions which cocaine produced in animals. The increased excitability of the cord was also attended by a rise in temperature. It was found that cocaine increased the frequency of respiration, and this was due, not to increased carbonic acid gas in the blood and the need for oxygen, but by a purely nervous stimulation which the drug exercised upon the nervous centres. The insuffla-

tion of cocaine in powder into the lungs resulted in an increased frequency in breathing also, and the conclusion was reached that cocaine is a direct respiratory stimulant. In small doses cocaine stimulated and accelerated the action of the frog's heart, and this effect persisted for some time after the blood containing the drug had left the heart. In large doses the heart was arrested in systole. The frequency of the heart's action in warm-blooded animals was not affected by small doses of cocaine; moderate doses produced a great acceleration, which sometimes became as high as three times the normal rate. In cocaine spasms the heart-beat was of course modified by the spasm. Regarding the effect of cocaine upon the pneumogastric nerve, it was found that not only the frequency but the vigor of the heart's contraction was altered. The increased frequency of the heart-beat was not caused by paralysis of the pneumogastric, for the nerve was found sensitive to the electric current after the use of very large amounts of cocaine. The drug lessens the susceptibility of the pneumogastric to electricity, but this effect does not persist, and disappears after even large doses if they are not renewed. The pneumogastric nerve does not lose its irritability, as shown by the fact that, after large doses have been given, the use of electricity on the nerve will influence respiration in its characteristic manner. Large doses of cocaine do not slow the heart's action. In its effect upon blood-pressure, doses of from $\frac{1}{4}$ to $\frac{1}{2}$ of a grain for each two pounds of body-weight increased blood-pressure in dogs; larger doses resulted in a lessening of blood-pressure. Great individual idiosyncrasies were observed. Cocaine retarded the fall in blood-pressure and lowering in body-heat, which usually follows severance of the spinal cord. In very large doses cocaine at first produced a lessening of blood-pressure; afterwards an increase. Cocaine was found to have a direct influence upon the blood-vessels. Experiments upon the circulation in extirpated organs of the body showed that in small doses, for example, $\frac{1}{100}$ per cent. of body-weight, it produced no marked effect upon the blood-vessels. Doses of $\frac{1}{100}$ per cent., $\frac{1}{80}$ per cent., and $\frac{1}{60}$ per cent. produced a well-marked paralysis of the blood-vessels of the extirpated organs. Upon the function of respiration it was found that cocaine, whether introduced into the lungs or the veins of an animal, produced a preliminary lessening in the frequency of breathing, followed by a persistent and characteris-

tic increase in the movements of respiration. Large doses produced a temporary paralysis, at times of the thorax, at times of the diaphragm. When the most intense and poisonous working of the drug is obtained, respiration is paralyzed. When the rectal temperature was above 106° F., increased respiration was observed as the precursor of respiratory paralysis and death. Artificial respiration is the best remedy for the respiratory paralysis of cocaine, as the heart continues to beat for some time after respiration ceases. Cocaine is of all known substances the most speedy and powerful increaser of bodily temperature. This increased temperature is not lessened by cutting the spinal cord. In determining the therapeutic uses and value of cocaine, experiments were made upon dogs whose skulls had been trephined and whose brains had been injured, and from these and other modes of research it was found that *cocaine was the best of all known excitants*, and this was confirmed by observations upon animals all of whose functions were rapidly failing. The most perfect antagonism was found to exist between chloral and cocaine, with the exception that the depression of temperature produced by chloral is not overcome by cocaine. An animal poisoned by chloral may be restored to consciousness and motion by cocaine, but no increase in the reduced body temperature occurs. The proportionate antagonism may be said to be $\frac{1}{3}$ of a grain of cocaine to each three pounds of body-weight, and 23 grains of chloral to each three pounds of body-weight. In attempting to antagonize the two drugs it must be remembered that in large doses both drugs paralyze respiration. The momentary paralysis of respiration produced by cocaine may be treated by artificial respiration. Fatal doses of chloral are endured when cocaine is first given. Chloroform and ether are direct antagonists by virtue of their subduing spasm and lowering temperature. When a patient is poisoned by cocaine and convulsions occur, with respiratory spasms, chloroform or ether may be given until the danger of spasm is passed, and chloral then used. The experimenter concludes that cocaine is of especial value in all narcotic poisoning by chloral, opium, morphine, and laudanum, where depression of the cardiac and respiratory centres exists. Also in chronic depressant poisonings from the bromides, or in spinal paralyses, the drug is indicated. It has all the advantages, without the poisonous nature, of strychnine.

*VESICAL INJECTIONS OF IODOFORM-
IZED ETHER IN REBELLIOUS
CASES OF CYSTITIS.*

In the *Lyon Médical*, June 5, 1887, M. A. CHANDELEUX reports some results obtained by him in the treatment of rebellious cases of cystitis by means of injections of a nearly saturated solution of iodoform in ether, or thirteen parts of iodoform to one hundred parts of ether. He thinks the choice of liquid a matter of considerable importance.

His first case so treated was a patient æt. 32, affected for eight months with a very painful tuberculous cystitis, giving rise to efforts at micturition every half-hour, and accompanied from time to time with a slight hæmaturia.

He first saw the patient in September, 1884. After having tried repeatedly instillations of nitrate of silver according to the method of Guyon (a measure which is generally successful in tuberculous cystitis), and without any other advantage than a slight diminution of the daily number of micturitions and a very slight modification of the pains, he determined to inject a small quantity of iodoformized ether. October 2 he injected 2 grammes (half a drachm) of the solution. Immediately the patient experienced atrocious pain, and for a half-hour he cried and complained. But quiet followed. During that day and the succeeding one the acts of micturition were a little more numerous than before the injection; but the following days they diminished in frequency, and five days afterwards there were not more than thirty or thirty-five in the twenty-four hours. The injections were repeated four times at intervals of five days, gradually increasing the amount until the last was 4 grammes (1 drachm). Each time the pain caused was less severe, the micturitions became less numerous, and finally decreased to ten in twenty-four hours, and without any uncomfortable accompanying sensation. The blood had entirely disappeared from the urine. Six months later the improvement was maintained.

In four other patients he had made use of this treatment. Only one of them had a cystitis of tuberculous origin, and in him also the instillations of nitrate of silver had had no appreciable results, for micturition continued to be painful, frequent (thirty to thirty-five times in twenty-four hours), and slightly sanguinolent at the moment of emission of the last drops of urine. The treatment was the same as in the preceding case, and the results were even more satisfactory.

An interesting phenomenon observed in this case was the distention of the bladder by the vaporization of the ether from the heat of the body.

The other cases submitted to this treatment were suffering, not from tuberculous cystitis, but from chronic cystitis of three, seven, and ten years' standing respectively, due in the first to gonorrhœal inflammation and in the two others to rheumatism.

These patients urinated from seventy to ninety-six times in twenty-four hours. The urine was lightly clouded, and contained a little muco-pus. A drop of blood was generally expelled after each act of micturition.

Nitrate of silver instillations led to some amelioration of the suffering, and reduced the number of micturitions to fifty in twenty-four hours, but could not carry the benefit any further. Then the injections of iodoformized ether were resorted to, as in the other cases. The pains, as in them, were severe at first, but progressively diminished, and one of these patients at the sixth injection was able to bear 6 grammes (1½ drachms) of the solution for twenty-two minutes. This patient was so far cured that he was obliged to urinate not more than twelve to fourteen times in twenty-four hours, instead of once every fifteen minutes, as at first.

The others urinate only eight times a day, and all are relieved of their pain in micturition.

The professor is disposed to regard the distention of the bladder by the ether vapor as being perhaps the most important element in the curative action thus described.—*St. Louis Courier of Medicine*, September, 1887.

A PHYSIOLOGICAL BASIS FOR AN IMPROVED CARDIAC PATHOLOGY.

The following is an abstract of a paper read by DR. T. WESLEY MILLS before the Canadian Medical Association at its recent meeting at Hamilton (*Canadian Practitioner*, September, 1887).

1. The views presented in this paper are such as grow mainly out of the writer's own and other recent investigations in cardiac physiology, and seem to be in harmony with the facts of clinical medicine and pathology. The principal thesis presented for the first time, and maintained in this paper, is to this effect: The nerve-centres are generators and reservoirs of nerve-force, which force is not only exerted through nerves during the func-

tional action, so called, of an organ or tissue, but is *constantly* being distributed to all the tissues of the body, according to their nutritive requirements. The functional action of a tissue is but a phase in its normal life; one of a cycle of changes essential to the well-being of that tissue, and without which its continued integrity is impossible. This view renders clearer the main part of the theory, which is that there is a *constant* outflow of nervous energy to the tissues, and not alone during the functional activity. It follows that functional use and the *highest* nutritive condition of a tissue are inseparable; but this view also explains why tissues do not perish outright, when not for some time functionally active, provided the centres presiding over them and the nerves distributed to them are intact; while they do generate in every instance when their nerves are divided. This explanation the writer would denominate the *neuro-trophic* theory, or better, the theory of *constant neurotrophic influence*. The evidence for this view is based upon common experience as to loss of appetite under depressing emotions; the results of functional and other disorders of the nerve-centres; the sequel of the section of the nerves of glands, muscle, etc. An explanation of the injurious effects on the heart of sexual excesses is given in the light of this theory. Athletic strain is intelligible only on some such view as this. We must recognize in man a *residual nerve-force*, exhaustion of which is followed by lasting injury. *Heart-failure falls under one general law for all the tissues*. The explanations hitherto given generally do not go beyond the remote cause (occasion). An explanation that is only mechanical can never be final for a living organism.

Certain peculiarities in cardiac disease are rendered much more intelligible when the *order of evolution* of the different parts of the heart in the animal series is considered. The oldest parts of the heart ancestrally considered have the greatest vitality.

It is also especially important both in etiology and treatment to remember the disproportionate development of the cerebrum in man.

2. The nerves of the heart now appear in a new light owing to recent researches. Influences from the nerve-centres reach the heart either by *sympathetic* nerve-fibres or *inhibitory* fibres proper. The vagus is really a *vago-sympathetic* nerve in all vertebrates thus far examined. The cardiac accelerators contain purely sympathetic fibres. The sympathetic

fibres that reach the heart, in whatever nerves found, tend to bring about destructive nutritive changes (catabolic metabolism), and so to exhaust the heart; while the inhibitory fibres affect constructive nutritive changes (anabolic metabolism).

The nerves of the heart exercise a *constant* influence over its nutrition. Section of these nerves leads to degenerative tissue-changes.

The views presented in this paper are not opposed to facts, while they furnish explanations that are both real and final.

BIBORATE OF AMMONIUM IN URIC ACID CALCULI.

The treatment of a paroxysm of renal colic is sufficiently plain, but the prevention of this paroxysm is a matter which has puzzled the master-minds of the medical profession from time immemorial. DR. WILLIAM J. CRITTENDEN states in the *Virginia Medical Monthly* for June, 1887, that he finds biborate of ammonium to be a drug possessing peculiar influence over uric acid calculi. In patients attacked with renal colic, caused by uric acid calculi, Dr. Crittenden prescribes 20-grain doses of biborate of ammonium every two hours until a free passage of urine takes place, and then every four hours until all ill feeling passes away. He then decreases the dose to 15 grains, three times a day, before meals, in a glass of flaxseed-tea, and continues this treatment for several months, discontinuing it for a day or two at a time every two weeks. When given for a length of time, he states that he has found it to be a good plan to combine it with lithiated extract of hydrangea in teaspoonful doses.

THE PHYSIOLOGICAL AND THERAPEUTICAL EFFECT OF HELLEBORUS VIRIDIS UPON THE HEART AND THE CIRCULATION OF THE BLOOD.

Helleborus viridis, of the family of the Ranunculæ, has been long known in medicine. In olden times many different species of hellebore were used as purgatives and emetics,—*H. viridis*, *orientalis*, *niger*, etc.

Prof. Schroff lays great stress upon the benefit obtained by the energetic action of the radix hellebori viridis upon the heart.

Further, Drs. Husemann and Marmé have extracted from the roots of different kinds of hellebore two glucosides,—helleborein and helleborin. The former, which is soluble in

water, in their opinion is analogous to digitalis ; the latter, however, which is easily dissolved in alcohol and not in water, is a narcotic.

From the proposition of Prof. S. P. Botkin, DR. N. ISCHISTOWITCH (*Centralb. f. d. Med. Wissen.*, July 9, 1887) experimented upon the effect of the radix hellebori viridis upon the heart and the circulation of the blood, using a liquid watery extract (extractum fluidum aquosum radicis hellebori viridis).

The principal results of his experiments upon frogs are as follows :

1. By subcutaneous injections of 0.1 to 0.6 c.c. 1 proc. of the watery solution of the extr. fluid. rad. hellebori vir. one noticed diminution of the number of heart contractions ; the contractions were fewer but more energetic.

Later, the ventricle during the dilatation begins to weaken, but not altogether, the contractions partake of a vermiform character, and at last the ventricle is brought to a stand-still in a strongly-contracted condition ; the exterior chambers are filled full of blood, contract, however, after a time, gradually decrease, and finally cease altogether. Before the entire cessation of the ventricle one contraction of the same will be two contractions of the outer chamber.

2. The changes in the action of the heart, described above, are observed by the previous severing of the sympathetico-vagus nerve and the injection of atropine. The observation of the diminution of the heart contractions was also made upon an excised heart with the assistance of the Williams apparatus for supplying the heart.

3. The excitability of the muscles of the heart increases at first and for a considerable time, after which the decrease begins.

This conclusion is supported by experiments made with the assistance of the Williams apparatus upon the point of the heart ventricle of an extracted heart.

The contractions of the point of the heart were periodically aroused by induction currents at definite intervals.

The minimum strength of the current was decided by the contraction of the point at each induction of the current.

4. The sympathetico-vagi possess the power to reserve the cessation of the heart until the entire cessation of the ventricle, after which irritation of the vagi prevents the contraction of the outer chambers.

To restore the heart to its normal, after using the remedy under discussion, an irritation of less strength is necessary than before the injection.

5. The blood-pressure in the arteries of the frog is increased through the extr. fluid. rad. hellebori vir.

This pressure is caused by the contraction of the smaller vessels (experiments of artificial blood circulation by the method of Prof. Setschenoff), and by the increase of the working power of the heart (experiments by the Williams apparatus).

The following results were obtained by experiments upon dogs :

1. Injections of from 0.1 to 1.5 c.c. per kilogramme of the weight of the body, of the watery solution of extr. fluid. rad. hellebori vir., cause the diminution of the beat of the pulse, and single heart contractions grow stronger ; the pressure of blood in the arteries is increased, also later begins an increase in the heart-beats and also a further increase in the pressure of blood.

After this the pressure decreases a little, the pulse becomes fluttering at times, which causes the heart to contract irregularly and suddenly to stop altogether.

2. The lessening of the beat of the pulse, which is characteristic of the first period of the effect of the medicine, can be prevented by the severing of the Nn. vagi or through injections of atropine.

3. The increase in the arterial blood-pressure is caused on one side by the contraction of the vessels of the body in consequence of the effect of our medicine upon the peripheric nervo-muscular apparatus of the vessels. (This has been proved by experiments in artificial blood circulation in amputated extremities.) But, on the other side, the increase in the pressure in the arteries during the increase of the strength of the heart contractions is dependent upon the increase of the action of the heart. This last I have proved with the assistance of Dr. G. Pawlow in experiments upon extracted hearts, with the exception of the greater and lesser circulation of the blood. (A description of this method will shortly appear in the *Centralblatt für Physiologie*.)

4. Experiments on artificial blood circulation through the cells of extirpated lungs prove that the action of our remedy causes the vessels of the lungs to contract.

5. The peripheric, as also the central vasodilator nerves, retain, after the poisoning by extr. fluid. rad. hellebori vir., their functional ability.

Clinical observations were made upon eleven cases of different heart-diseases at the period of a beginning failure of compensation.

The doses were from 10 to 20 drops of a one per cent. watery solution four or six times daily, or a teaspoonful of the infusion every two hours.

In six cases after use of the medicine there was strengthening of the pulse, lessening of the frequency of the pulse, and increased secretion of urine. All appearance of the failure of compensation disappeared rapidly, and the transudation was rapidly absorbed.

In two cases extr. fluid. rad. hellebori vir. and infusum adonid. vernalis given separately were without effect, but given together the condition of the patients improved rapidly.

In three cases our remedy gave negative results. In two of these cases the affection of the heart was accompanied by nephritis, and in the third case there was a complicated malformation of the heart, accompanied by pleuritic exsudativa.

DETAILS OF KOLISHER'S TREATMENT FOR TUBERCULOSIS.

We add to the account which we have already given of this method of treatment the following details as given in the *Centralblatt für die gesammte Therapie* for July, 1887: In cases where an opening has not yet been established the part is covered with a dressing of sublimate gauze for twenty-four hours, then thoroughly cleansed with soap and water, and finally with sublimate solution 1 to 1000. The injection is made with a Pravaz's syringe, having a platinum needle, which has been cleansed with a five per cent. solution of carbolic acid. The fluid is gradually injected until it thoroughly distends the tuberculous tissue, giving an elastic feeling on palpation; this is pushed until the tissue is tense, the portions not injected feeling less elastic and being depressed. The needle is inserted to its full length, and its passage into healthy tissue is marked by a sensation of resistance or grating; the tuberculous matter does not bleed as freely as does healthy tissue, and the latter is painful when injected in a greater degree than the diseased parts. The injections are painful, and morphia is frequently needed to quiet patients afterwards. These pains continue for several hours, and are often accompanied by fever of considerable severity, which persists for twelve or twenty-four hours. The part is at first covered with an antiseptic bandage, which is removed after five or six days, to be followed by a plaster-of-Paris bandage,

which is removed as needed. When the stage of reaction and hardening has become fully established, which generally occurs in from three to six weeks, passive motion and massage are employed to restore motion. Contractions and subluxations are treated as they demand. When in a week after injection abscesses form and break, the opening is enlarged and the cavity tamponed with gauze soaked in phosphate solution; over the tampon is placed an antiseptic dressing. These tampons are generally removed once in two days, as a profuse discharge of foul matter ensues. When the cavity has filled with healthy granulations they are treated with nitrate of silver and iodoform, as is usual in surgery. Even in these cases careful after-treatment may secure motion. In cases of necrosis the same treatment is employed. Cold abscesses are laid open, scooped, and tamponed with calcium phosphate gauze, and the edges are often freshened and sutured after Kocher's method, which lessens the scar produced. When tubercular granulations have reached the surface of the body the point of exit is enlarged, the edges freshened, the cavity tamponed with gauze, and the cavity injected with the solution; if the granulations are very torpid the caustic solutions of calcium phosphate are employed. Two cases of well-marked tuberculous fistulæ were treated with good success. Tuberculous skin-ulcers were bandaged with gauze soaked in phosphate solutions, and healed rapidly. The number of tuberculous lymphomata treated was too small to admit of reaching any conclusion. FREUND has experimented with solutions of various substances for Kolischer's use, calcium chloride, calcium carbonate, and water charged with saline matter, giving no results. Solutions of acid calcium phosphate were then used, and after many experiments two solutions were united containing one and two per cent. of free phosphoric acid. The following solution is generally used for injection:

Calci. phosphor. neutral., 5 parts;
Aqueæ dest., 50 parts;
Acid. phosph., q. s. ad solut. perfect.
Filtrea, adde
Acid. phosphor. dil., $\frac{1}{10}$ part;
Aqueæ dest., q. s. ad 100 parts.

The same solution is generally used for impregnating gauze. In especially torpid processes a double quantity of phosphoric acid is added, to the proportion of two per cent. The solutions used for injection are first sterilized.

AN IMPROVED CAUSTIC PASTE.

DR. JULES FELIX, of Brussels, having found existing caustics unsatisfactory from the great pain which is caused by their application, from the difficulty of limiting their action precisely to the part desired, from their deliquescence and from various other causes, has devised a form of caustic paste which he has been using for some time past with the best results. It does not cause severe pain or set up any general reaction; the eschar is hard and well defined, so as to be easily detached. It is also a powerful antiseptic and hæmostatic. It is not deliquescent, but keeps its consistence, which is that of putty, well, and so lends itself easily to manipulation. The hands should be wetted when applying it. They are not in any danger of being acted on. The paste is allowed to remain for from six to twenty-four hours according to the amount of eschar which it is desired to form. The formula for the paste is as follows: Mix in a mortar the following substances in powder: Starch, 37 grms.; wheat flour, 112 grms.; bichloride of mercury, 1 grm.; dry chloride of zinc, 110 grms.; iodol pure, 10 grms.; croton chloral, 10 grms.; bromide of camphor, 10 grms.; crystallized carbolic acid, 10 grms. Then add gradually a sufficient quantity of distilled water to form a homogeneous paste, without lumps, of the consistence of putty. This paste will keep an indefinite length of time.—*Lancet*, August 6, 1887.

ANTIPYRIN SUBCUTANEOUSLY IN PLACE OF MORPHINE.

GERMAIN SÉE has reported to the Academy of Sciences his observations in the use of antipyrin subcutaneously in place of morphine. The ready solubility of the drug in water makes this mode of its administration easy. 8 grains of antipyrin may be dissolved in an equal amount of distilled water, and given as one dose. A feeling of generally-increased tension follows, which is soon succeeded by a remission of pain, from whatever cause. None of the ill after-effects so often produced by morphine follow the administration of antipyrin. Neither somnolence nor excitability are produced by antipyrin, and it apparently possesses not only the power of checking pain, but of curing it. The diseases in whose treatment it may be employed are many. Excellent results were obtained by the writer in the treatment of acute articular rheumatism by

two or three injections of 8 grains of antipyrin, aided by the further use of 45 grains taken daily for some time. Acutely painful gout, chronic gout, and rheumatism have been very favorably modified by this remedy. In neuralgias, lumbago, migraine, and tabes it has cured pain. One injection, and from 45 to 60 grains taken internally, were especially successful in tabes. In patients suffering from biliary calculi the drug gives the best results, without disturbing the intestinal functions. In this respect it is greatly superior to morphine, which deranges the secretions. In nephritic colic it is equally valuable, as it relieves the pain without deranging the secretion or voiding of urine. In painful affections of the heart and angina pectoris antipyrin gives the greatest relief; attacks of angina pectoris are diminished in number and violence by these injections. In asthma and severe dyspnœas of whatever origin antipyrin checked the paroxysm most promptly. It was used in these cases during the attack itself, when iodide of potassium had failed to break up the disease, and the patient had been accustomed to have recourse to morphine for relief. Antipyrin promotes and facilitates expectoration in asthma, without suppressing the bronchial secretions. So far, in the writer's experience, there is not a disease or complication where antipyrin cannot replace morphine in the cure of the pain produced by disease. The advantages to be gained by society in using a drug for which a habit will not readily be formed, as for morphine, are very great. Antipyrin diminishes the reflex excitability of the spinal cord, without producing the sensations of intoxication which morphine causes.—*La France Médicale*, No. 86, 1887.

BORATE OF AMMONIUM IN PHTHISIS.

Borate of ammonium has been found by PROF. LASHKEVICH of great value in phthisis. Internally, he gives 5 grains three times a day in solution, either alone or combined with codeia, hyoscyamus, or other sedatives. This he finds produces a marked effect on the expectoration, and in some cases where the affection had only reached an early stage a distinct diminution of the pyrexia was observed. The solution was also employed with advantage as an inhalation (in the form of spray?), reducing the expectoration and alleviating irritating and painful conditions of the mouth and throat.—*Lancet*, August 6, 1887.

THE INTERNATIONAL MEDICAL CONGRESS.*

AN EXPERIMENTAL CONTRIBUTION TO INTESTINAL SURGERY, WITH SPECIAL REFERENCE TO THE TREATMENT OF INTESTINAL OBSTRU- TION.

THE following is an abstract of a paper read before the Section in General Surgery by DR. NICHOLAS SENN, of Milwaukee, Wis. :

1. ARTIFICIAL INTESTINAL OBSTRUCTION.—STENOSIS.—(a) *Partial enterectomy and longitudinal suturing of wound.*—Traumatic stenosis from this cause becomes a source of danger from obstruction or perforation in all cases where the lumen of the bowel is reduced more than one-half in size. Longitudinal suturing of wounds on the mesenteric side of the intestine should never be practised, as such a procedure is invariably followed by gangrene and perforation by intercepting the vascular supply to the portion of bowel which corresponds to the mesenteric defect.

(b) *Circular Constriction of Intestine.*—The immediate cause of gangrene in circular constriction of a loop of intestine is due to obstruction of the venous circulation, and takes place first at a point most remote from the cause of the obstruction.

2. FLEXION.—(a) *Flexion produced by Partial Enterectomy and Transverse Suture of Wound.*—On the convex surface of the bowel a defect an inch in width can be closed by transverse suturing without causing obstruction by flexion. In such cases the stenosis is subsequently corrected by a compensating bulging, or dilatation, of the mesenteric side of the bowel. Closing a wound of such dimensions on the mesenteric side of the bowel by transverse suturing may give rise to intestinal obstruction by flexion, and to gangrene and perforation by seriously impairing the arterial supply to, and venous return from, the portion of bowel corresponding with the mesenteric defect.

(b) *Flexion caused by Inflammatory and other Extrinsic Causes* gives rise to intestinal obstruction only in case the functional capacity of the flexed portion of the bowel has been diminished or suspended by the causes which have produced the flexion, or by subsequent causes independently of the flexion.

3. VOLVULUS.—As in flexion, a volvulus gives rise to symptoms of obstruction when

the causes which have given rise to a rotation upon its axis of a loop of bowel have at the same time produced an impairment or suspension of peristalsis in the portion of bowel which constitutes the volvulus, or when a diminution or suspension of peristalsis follows in consequence of the rotation.

4. INVAGINATION.—Accumulation of intestinal contents above the seat of invagination is one of the most important factors which prevents spontaneous disinvagination, and which determines gangrene of the intussusciptions.

Spontaneous reduction is not more frequent in ascending than descending invagination.

The immediate cause of gangrene of the intussusciptions is obstruction to the return of venous blood by constriction at the neck of the intussusciptions. Ileo-cæcal invagination, when recent, can frequently be reduced by distentions of the colon and rectum with water, but this method of reduction must be practised with great care and gentleness, as over-distention of the colon and rectum is productive of multiple longitudinal lacerations of the peritoneal coat, an accident which is followed by the gravest consequences.

The competency of the ileo-cæcal valve can only be overcome by over-distention of the cæcum, and is effected by a mechanical separation of the margins of the valve; consequently it is imprudent to attempt treatment of intestinal obstruction beyond the ileo-cæcal valve by injections per rectum.

ENTERECTOMY.—Resection of more than six feet of the small intestine in dogs is uniformly fatal. The cause of death in such cases is always attributable to the immediate effects of the trauma. Resection of more than four feet of the small intestine in dogs is incompatible with normal digestion, absorption, and nutrition, and often results in death from marasmus.

In cases of extensive intestinal resection the remaining portion of the intestinal tract undergoes compensatory hypertrophy, which, macroscopically, is shown by thickening of the intestinal coats and increased vascularization.

PHYSIOLOGICAL EXCLUSION.—Physiological exclusion of an extensive portion of the intestinal tract does not impair digestion, absorption, and nutrition as seriously as the removal of a similar portion by resection.

Fæcal accumulation does not take place in the excluded portion of the intestinal canal.

The excluded portion of the bowel undergoes progressive atrophy.

* The following abstracts of papers read before the different sections of the International Medical Congress are selected from the report furnished by the *New York Medical Record*.

CIRCULAR ENTERORRHAPHY.—A modification of Jobert's invagination-suture, by lining the intussusceptum with a thin, flexible rubber ring, and the substitution of catgut for silk sutures, is preferable to Czerny-Lembert sutures.

The line of suturing on neck of intussusciens should be covered by a flap or graft of omentum in all cases of circular resection, as this procedure furnishes an additional protection against perforation.

In circular enterorrhaphy, continuity of the peritoneal surface should be secured where the mesentery is detached by uniting the peritoneum with a fine catgut suture before the bowel is united, as this modification of the ordinary method furnishes better security against perforation on the mesenteric side.

INTESTINAL ANASTOMOSIS.

The formation of a fistulous communication between the bowel above and below the seat of obstruction should take the place of resection and circular enterorrhaphy in all cases where it is impossible or impracticable to remove the cause of obstruction, or where the pathological conditions which have given rise to the obstruction do not constitute an intrinsic source of danger. Gastro-enterostomy and jejuno-ileostomy should always be made by approximation with partially or completely decalcified perforated bone-plates.

In making an intestinal anastomosis for obstructions in the cæcum or colon, the communication above and below the seat of obstruction can be established by apposition with decalcified perforated bone-plates, or by lateral implantation of the ileum into the colon or rectum. An ileo-colostomy, or ileo-rectostomy, by approximation with decalcified perforated bone-plates or lateral implantation should be done in all cases of irreducible ileo-cæcal invaginations where the local signs do not indicate the existence, or occurrence, of gangrene and perforation. In all cases of threatened gangrene and perforation the invaginated portion should be excised, both ends of the bowel closed, and the continuity of the intestinal canal restored by making an ileo-colostomy by approximation with perforated decalcified bone-plates or by lateral implantation. The restoration of the continuity of the intestinal canal by perforated approximation-plates, or lateral implantation, should be resorted to in all cases where circular enterorrhaphy is impossible on account of the difference in the size of the lumina of the two ends of the bowel.

In cases of multiple gunshot wounds of the

intestines involving the lateral or convex side of the bowel, the formation of intestinal anastomosis by perforated decalcified bone-plates should be preferred to suturing, as this procedure is equally, if not more, safe and requires less time.

ADHESION EXPERIMENTS.—Definitive healing of an intestinal wound is only completed after the formation of a net-work of new vessels in the product of tissue-proliferation from the approximated serous surfaces. Under favorable circumstances quite firm adhesions are formed between the peritoneal surfaces within six to twelve hours which effectually resist the pressure from within outward. Scarification of the peritoneum at the seat of approximation hastens the formation of adhesions and the definitive healing of intestinal wounds.

Omental grafts, from one to two inches in width, and sufficiently long to completely encircle the bowel, retain their vitality, become firmly adherent in from twelve to eighteen hours, and are freely supplied with blood-vessels in from twenty-four to forty-eight hours. Omental transplantation, or omental grafting, should be done in every circular resection, or suturing of large intestinal wounds, as this procedure favors the healing of the visceral wound and furnishes an additional protection against perforation.

The speaker presented some valuable specimens in which the operation had been performed on dogs; these specimens fully illustrated the value of the method advocated, and its entire feasibility, the union in some of these specimens being most remarkable. He called attention to its use in stenosis of the pyloric orifice. The duodenum or the first convenient coil of intestine being connected with the stomach by the method advocated, adhesions would form in from fourteen to twenty-four hours.

The adhesions in the specimen shown were wonderfully firm and strong.

ARTIFICIAL AND COMBINED DRAINAGE OF THE BLADDER, KIDNEYS, AND UTERUS THROUGH THE VAGINA, WITH AND WITHOUT GRADUATED PRESSURE.

In this paper, read before the Section in Gynæcology, DR. NATHAN BOZEMAN, of New York, described an instrument which he had devised recently. This draws the uterus away from the mucous membrane, and in the most perfect manner. He has also been able to combine in the same instrument drainage with the dilatation of the cicatricial tissue of

the vagina. The form of the instruments which concerns us here is intended for drainage alone, and he has called them intra-vaginal and vulvo-vaginal drainage-supports. The intra-vaginal instrument is applicable in most cases to all positions of the body. The vulvo-vaginal form is suited to the recumbent position, and to cases where the perineum is lacerated. These can be introduced and removed by the patient when necessary. They are small and simple, free from angles and sharp bodies, are readily kept clean, and excite no discomfort or irritation of the vagina. They do not press on the rectum or vagina, nor do they interfere with locomotion.

The author closed his paper with the following conclusions:

1. The importance of completion of the operation for fistula has not been duly appreciated. This forms, in many cases, the principal difficulty in the successful performance of the operation for the closure of the fistular opening. In other cases, when the fistula is cured, but the complications left without treatment, they lead sooner or later to the death or suffering of the patient. The greatest care should therefore be taken to discover and remove them.

2. Kolpokleisis, occlusion of the os uteri, and incision of the cervix in the bladder or rectum, are unjustifiable operations. They destroy the functions of the generative organs, lead to cystitis, then form venereal and vesicular calculi, pyelitis, and other diseases. Moreover, they are unnecessary. By means of the preparatory treatment of the complication by the aid of his button-suture and his dilating speculum, the author has been able to overcome all the difficulties which have been described as indications for operation.

3. The association of combined drainage in the dilatation of the vagina is a great improvement. The inconvenience and evil effects of incontinence of urine are thereby lessened, and the duration of the treatment shortened by the more rapid healing of the incisions and the formation of less cicatricial material in the reparative process.

4. We now propose a means of palliating the suffering due to incontinence of urine in a small proportion of cases of fistula which are incurable by this method,—even the dangerous one of kolpokleisis. Dr. Bozeman believes that some form of drainage may be instituted in every case, and the patient may be thus restored to enjoy life and the performance of its duties.

5. The possession of a system of combined

drainage will widen the scope of the operation of kolpo-cystotomy, done for cystitis, by removing the evils of incontinence of urine, now the chief objection to its performance.

6. Finally, the operation which Dr. Bozeman calls kolpo-urethro-cystotomy, followed by the exploration and treatment of the disease of the ureters and pelvis of the kidney, appears to have a brilliant future before it. In the treatment of pyelitis, renal calculi, and obstruction of the ureters, it will restrict within narrow limits the operation of nephrotomy and nephrectomy.

THE USE OF THE VAGINAL TAMPON IN PELVIC INFLAMMATION.

DR. W. W. POTTER, of Buffalo, N. Y., read a paper with the above title before the Section in Gynæcology, of which the following is an abstract:

A married woman, 22 years of age, came under the author's care about a year ago, with a previous history of abortion, which happened eight months before, from which time her invalidism dated. Upon his first examination, early in June, he found great tenderness of the intra pelvic organs and tissues, with partial fixation of the womb. The left tube was enlarged, and presented a banana-shaped mass to the touch, while the surrounding cellular tissue was more or less hard and tense. This finally grew soft, and late in August pus was discharged through the uterus, after which the tube diminished in size. There was relief from pain, and the general health improved. The improvement continued until November, when the tube again grew tender and swollen; but another discharge of pus soon brought relief again. From this time onward the gain was uninterrupted, and she was dismissed cured on April 1, 1887.

The treatment consisted in the regular and systematic tamponnement of the vagina twice a week, copious vaginal lavements of hot water, frequently administered, and constitutional measures, principally of iron and arsenic. The vagina was insufflated just prior to each packing with iodoform, bismuth, mineral earth, or other powder, and then small pledgets of cotton, wool, or jute were introduced in sufficient numbers to make gentle, firm, and even pressure, as well as afford comfortable support. Though there was much more of detail, he said these were the essentials of the management, and their

continuous employment for a period of nine months brought recovery.

Reference was made to the advancement gained of late in the differentiation of pelvic diseases of women, whereby the domain of gynecological therapeutics had been so enlarged that it was no longer possible to group all the ailments of woman under the inexact and misleading heads, "ulceration," "prolapse," and "inflammation."

One of the important consequences of this more accurate classification of pelvic disease had been to invite surgical aid and interference in regions previously considered unsafe for the knife, and for maladies hitherto regarded incurable. The road to fame was so direct through the open gateway of a brilliant abdominal section that it was just possible that some ambitious men had removed an innocent ovary or unoffending tube, now and then, to obtain a "record" as spayers of women. He would not disparage the work of Battey, Tait, Hegar, Goodell, and others in this field, for he believed it of inestimable worth, nor would he deny that excision was often necessary; but, on the other hand, he thought the appendages might often be saved by timely and judicious management. The case reported, one of a number he had seen of a similar nature, was sufficiently typical to illustrate his purpose, and from which the following deductions might fairly be drawn:

1. That many cases of disease of the uterine appendages might be arrested in their progress and diverted to successful issue without operation by appropriate treatment resorted to in their earliest stages

2. That the early employment of regular, prolonged, and systematic vaginal tamponnement afforded one of the safest, surest, and simplest ways of preventing the ravages, in whole or in part, of the maladies in question, and of averting that mutilating of the sexuality of women consequent upon excision.

VAGINAL TAMPONNEMENT.

This occasion gave him the opportunity of offering some remarks upon the employment of vaginal tamponnement in the treatment of vaginal disease in general, a subject which was again creeping into medical literature through society discussions and papers.

In order to obtain the full benefits of this treatment, it was of the first importance that the packing be well done; that it be so placed as to afford ample support, give secure rest to the parts, make firm pressure, and not become dislodged during its wearing; while, at

the same time, it must not produce discomfort, interfere with the functions of the pelvic organs, nor cause irritation in the least degree.

In giving instructions as to its use, he states the tampon must be multiple, and not made up of a single wad or mass, as was too often done.

For the past ten years he has made systematic use of the knee-chest posture in the reduction of pelvic visceral displacements and of the multiple tampon in that connection, while latterly he had also employed them in the treatment of pelvic inflammations, the whole comprising many hundred cases. As a result of this experience he had reached the following conclusions:

1. In retro-deviations of the uterus the reposition of the organ should be made in the genu-pectoral posture without the aid of any other repositor than the finger; it should then be shoved up and held in place by the multiple tampon. This treatment should always precede the employment of a pessary for a longer or shorter period, according to the peculiarities of the case.

2. The foregoing applies with equally cogent force to prolapses and inflammations of the ovaries whenever these principles can be suitably adjusted to such cases.

3. In abrasions, erosions, and ulcerations of the os, in the hyperplastic womb, in subinvolution, in cystocele, in rectocele, and in all conditions of disturbed or impaired nutrition of the pelvic organs, it affords a most efficient form of preparatory or curative treatment, tending to give the organs rest, restore their tone, deplete engorgement, remove blood-stasis, improve locomotive power, and arrest retrograde tendencies in general.

4. In pelvic inflammations, whether of cellular, peritoneal, tubal, or other origin or involvement, it will often change their current or arrest progress, prevent suppuration or abridge its ravages, and thus often guide to a successful issue without a final appeal to a formidable, and perhaps dangerous, operation.

HOT WATER IN THE TREATMENT OF EYE-DISEASES.

DR. LEARTUS CONNOR, of Detroit, Mich., read a paper with the above title before the Section in Ophthalmology.

Dr. Connor stated that that remedy was sought after which would most certainly induce, first, good feeding of the tissue; second,

removal of morbid products and morbid agents; and, third, the promotion of speedy repair. Such an agent is hot water in a great variety of eye-affections, such as mild catarrhal and phlyctenular conjunctivitis, corneitis, affections of the sclera and iris, and even, in some cases, retinal hyperæmia. In iritis, where the pupil refuses to respond to mydriatics, hot water will exert a marked effect in assisting dilatation of the pupil. Similar beneficial results in reducing inflammatory action had been noticed by him in catarrhal and purulent ophthalmia, in relieving the pain in glaucoma and acute dacryocystitis.

There is no morbid state of the eye on which it may not exert beneficial influence. The results reported by divers observers vary with the different modes of using it. The water should be as hot as the end of the forefinger will bear without discomfort. The method preferred by the essayist was to take a common tumbler, fill it to the brim with hot water, and, inclining the head slightly forward, apply the rim of the tumbler to the side of the nose and to the brow and cheek about the eye, which brings the eye itself actually into the water. The amount of water loses its heat slowly, and does not require frequent changing, and the eye may be kept in hot water with very little trouble for hours at a time. Antiseptics may be added, and the remedy is easily attainable with means for application. It is safe without the watchful care of the physician, while moist heat by any solid substance, as poultices, should never be used except under the direct supervision of the attendant.

Poultices are unsafe and unreliable means of applying heat to the eye; also dirty, especially on denuded surfaces. Compresses are less objectionable, and may be used as a substitute for hot water.

Local effects: 1. Contraction of blood-vessels in and about the eye. Controls hemorrhages better than cold water, and blanches the tissues in conjunctivitis, blepharitis, phlyctenulæ; and after the use of hot water the ophthalmoscope shows the retinal vessels to be reduced in size. In one case where drawings were made of the vessels before and after, the difference was very marked, and the relief of retinal congestion and improvement of vision very noticeable.

The temperature of the water must vary with the sensations of the patient. The tissues should not be exhausted.

2. Hot water will wash away or destroy all morbid secretions or excretions. At a

temperature of 132° F. it destroys the bacillus of anthrax and many others, and many eyes can bear a somewhat higher temperature.

3. It promotes the healthful activity of reparative tissue or protoplasm.

4. It exerts direct power in relieving muscular fatigue and spasm.

FEVER, ITS CAUSES, MECHANISM, AND RATIONAL TREATMENT.

DR. AUSTIN FLINT, LL.D., of New York, delivered a general address with the above title, in which he reached the following conclusions:

1. Fevers, especially those belonging to the class of acute diseases, are self-limited in their duration, and are due each one to a special cause, a micro-organism, the operation of which ceases after the lapse of a certain time.

2. We are as yet unable to destroy directly the morbid organisms which give rise to continued fevers; and we must be content, for the present, to moderate their action and to sustain the powers of resistance of patients.

3. The production of animal heat involves oxidation of parts of the organism or of articles of food, represented in the formation and discharge of nitrogenized excrementitious matters, carbonic acid, and water.

4. As regards its relations to general nutrition and the production of animal heat, water formed in the body by a process of oxidation is to be counted as an excrementitious principle.

5. Fever, as observed in the so-called essential fevers, may be defined as a condition of excessive production of heat, involving defective nutrition or inanition, an excessive production and discharge of nitrogenized excrementitious matters and carbonic acid, with waste and degeneration of the tissues, and partial or complete suppression of the production and discharge of water.

6. Aside from the influence of complications and accidents, the ataxic symptoms in fevers, the intensity and persistence of which endanger life, are secondary to the fever and are usually proportionate to the elevation of temperature. These symptoms are ameliorated by measures of treatment directed to a reduction of the general temperature of the body.

7. The abstraction of heat by external cold and the reduction of temperature by antipyretics administered internally, without affecting the special cause of the fever, improve

the symptoms which are secondary to the pyrexia.

8. In health, during a period of inanition, the consumption of the tissues in the production of animal heat is in a measure saved by an increased production and excretion of water.

9. In fever, the effects of inanition, manifested by destruction and degeneration of tissues, are intensified by a deficient formation and excretion of water.

10. Alimentation in fever, the object of which is to retard and repair the destruction and degeneration of tissues and organs, is difficult mainly on account of derangements of the digestive organs; and this difficulty is to be met by the administration of articles of food easily digested, or of articles in which the processes of digestion have been begun or are partly accomplished.

11. In the introduction of hydrocarbons, which are important factors in the production of animal heat, alcohol presents a form of hydrocarbon which is promptly oxidized, and in which absorption can take place without preparation by digestion.

12. Precisely in so far as it is oxidized in the body, alcohol furnishes matter which is consumed in the excessive production of heat in fever, and saves destruction and degeneration of tissue.

13. The introduction of matters consumed in the production of heat in fever diminishes, rather than increases, the intensity of the pyrexia.

14. As the oxidation of alcohol necessarily involves the formation of water and limits the destruction of tissue, its action in fever tends to restore the normal processes of heat production, in which the formation of water plays an important part.

15. The great objects in the treatment of fever itself are to limit and reduce the pyrexia by direct and indirect means; to limit and repair destruction and degeneration of tissues and organs by alimentation; to provide matters for consumption in the abnormal production of heat, and thus to place the system in the most favorable condition for recuperation after the disease shall have run its course.

TREATMENT OF FRACTURES OF THE MAXILLÆ WITH MODIFIED INTER-DENTAL SPLINT.

DR. WILLIAM CARR, New York, N. Y., gave a clinic on the treatment of fracture of the maxillæ with modified interdental splint,

before the Section in Dental and Oral Surgery.

The majority of fractures of the inferior maxilla occur in the body rarely at the symphysis menti, but usually directly anterior or posterior to the mental foramen. A noticeable fact in connection with these fractures is that the victim rarely applies for treatment for several days succeeding the injury. He realizes that some of his teeth are loosened, and also that he is painfully bruised, but does not seek surgical aid until he becomes alarmed by the increased inflammatory condition of the parts. There is but little difficulty in establishing a correct diagnosis, as usually the following symptoms are present,—great pain in the effort to open and close the mouth, swelling, crepitus, inflammation, inability to masticate, and marked irregularity of the teeth.

Treatment.—It is identical with that of other fractures,—namely, to bring the parts into apposition and retain them firmly until ossification is completed. For treatment of fractures of the maxillæ there is nothing superior to the interdental splint. When properly adjusted, speedy union may be secured without deformity of the jaw or irregularity of the teeth. Before taking the impression a careful examination of the parts should be made. Loose teeth and spiculæ of bone should be removed, and the parts should then be brought as nearly as possible to their normal position. An accurate impression should be made with impression-compound or wax. The material used should be as warm as the patient can bear it, in order to prevent unnecessary pain, and also to prevent further displacement of the parts. The splint is made of vulcanite, and covers all the teeth of the lower jaw, and all the teeth posterior to the canine in the upper jaw, leaving a space of about three or four lines through which the patient may receive nourishment. Small holes are drilled in the splint over the grinding surface of each molar for the purpose of ascertaining whether its adjustment is proper.

The splint should first be adjusted to the sound jaw, then gently bring the fractured jaw into position until it has passed about two-thirds of the length of the teeth, then with a quick, firm motion bring the parts into position. Next apply a four-tail bandage, which should be retained from three to five days; after this time, in the majority of cases, it may with safety be removed during the day, but should be replaced at night until the removal of the splint. The patient should be furnished with an ordinary rubber syringe,

and instructed to keep the mouth thoroughly cleansed. For disinfectants the author uses peroxide of hydrogen, three per cent. solution, or a solution of bisulphate of sodium in the proportion of 3i to 3i of water.

In ordinary cases the splint should be retained for three or four weeks, according to the physical condition of the patient, unless unforeseen complications should arise. The application of the splint, combined with thorough cleanliness, will usually be all the treatment required.

The advantages, besides those previously stated, are that the patient experiences but little pain and inconvenience, and can, as a rule, attend to his business almost immediately after the splint is applied.

It is not necessary that all the teeth, nor, indeed, that any should be present in the mouth in order to make this splint serve its purpose. In the first case the rubber can be made to take the place of the missing teeth, and in the latter case a perfect adaptation of the splint to the alveolar ridges can be secured, and will be found to keep the parts in perfect apposition.

Should it be deemed advisable to place a splint in position within an hour or two after seeing the case, one can be constructed entirely of ordinary gutta-percha, with just enough wire inside to stiffen it. Dr. Carr demonstrated this last method; it is very simple, and can be made by any surgeon.

THE ACTION OF CERTAIN DRUGS ON THE CIRCULATION AND SECRETION OF THE KIDNEY.

DR. CHARLES D. F. PHILLIPS, of London, read a paper with the above title before the Section in Therapeutics.

This contained a number of very interesting experiments, made with Roy's onkometer, with caffeine, sparteine, strophanthine, digitalin, and ulexine.* He concluded that the flow of urine is not so much dependent on the blood-pressure as on the rate of flow of the blood in the renal vessels. With regard to this point it is necessary to remember that, although such drugs as strophanthine produce a great increase in the *force* of the cardiac beats, yet these are very much slowed, so that it is quite possible that, although the heart's action is stronger, yet the total amount of blood sent through any given organ, such as the kidney, in a given time, may remain the same; whereas such a drug as digitalis, producing,

as it does, a rise of blood-pressure and a contraction of the kidney-vessels, may cause an increased quantity of blood to pass through the renal vessels. On this view one could find the explanation of digitalin being a diuretic and strophanthine not being one.

Inasmuch, however, as sparteine has not so marked diuretic action, we must also assume that digitalin must have some peripheral action on the secretory apparatus of the kidney.

His results were tabulated briefly as follows:

(A) DRUGS THAT FIRST CONTRACT AND AFTERWARDS DILATE THE KIDNEY.

(1) *Caffeine* in small doses induces in the stage of contraction a fall of blood-pressure, in that of expansion a slight rise. During the former the flow of urine *may* be arrested; during the latter it is always increased, such increase depending on dilatation of renal vessels.

(The possible *arrest* of secretion during the first stage is special to caffeine, and may be induced by large or repeated doses.)

(2) *Ulexine*—gr. $\frac{1}{2}$ —greatly raises blood-pressure during the first stage (that of contraction); in the second, expansion is much greater in degree but shorter in duration than under caffeine, and is accompanied by brief but marked increase in urinary flow; the effective dose is limited by its toxic action on respiratory centres. Practically, *excess* of caffeine induces only the first stage, *excess* of ulexine only the second.

(B) SUBSTANCES THAT DILATE THE KIDNEY, BUT TO LESS EXTENT AND MORE SLOWLY THAN CAFFEINE AND ULEXINE,

are dextrose, urea, sodium chloride and acetate, and probably all constituents of the urine.

(C) DRUGS THAT CONTRACT THE KIDNEY WITHOUT SUBSEQUENT EXPANSION.

(1) Digitalin, with *increased* secretion of urine (probably resulting from general heightened blood-pressure).

(2) Sparteine, with *diminished* secretion (in health, at least).

(3) Strophanthine causes slight temporary contraction, with no marked increase of secretion.

(4) Apocynëine, similar to temporary contraction, and no definite increase of secretion.

(5) Turpentine, (6) adonidin, and (7) barium chloride give similar results.

In conclusion, it seemed to him that the

* This is an alkaloid from the gorse, *Ulex europæus*.

plethysmographic method of experimentation is a valuable one for determining the exact action of drugs on the circulation, and one that deserves more attention than it has hitherto attracted.

A NEW METHOD OF TREATING DISEASES OF THE SKIN LOCALLY.

In the Section in Dermatology and Syphilography DR. VALENTINE KNAGGS, of London, England, proposed as a substitute for ointments the employment of emulsions, which, upon drying on the skin, form protective films. He had employed these dressings for the past two years with gratifying results in eczemas and other non-specific exudations. The inunction of the body with fixed oils has been found of immense service, but they are not adhesive, and exuding fluids readily escape from the surface. There are two methods of rendering oily substances adhesive,—1. By adding to them resinous, gummy, or alkaline substances; 2. In making use of gums to combine or emulsify a fat with water.

Adhesive preparations, unlike oils, tend to arrest skin-action. Thus tar, varnish, or colodion form an impervious covering. Ointments to which adhesive substances are added diminish skin-action, but do not abolish it.

Well-made emulsions resemble milk or cream, are soluble in watery fluids, and are markedly adhesive, and are made by combining an ointment-basis with water, a vegetable gum, and a suitable antiseptic.

Thus the formula preferred would read :

- R Paraffine molle, \mathfrak{z} i;
 - Pulv. gum acac., gr. clx;
 - Boracic acid, gr. xvi;
 - Aquæ, ad \mathfrak{z} ii.
- Stir until emulsified.

Bismuth, zinc, sulphur, or other medicament may be added as desired. Smear over the skin, a film is formed, which is flexible and protective, and the antiseptics and medicaments have the best opportunity of exercising a beneficial influence.

The author called especial attention to the fact that all lint and textile dressings could be dispensed with. He did not expect these gum emulsions to displace older methods, but that they would serve a useful purpose.

In discussing the paper, DR. UNNA said that we were now in the period of transition, making our annual change of treatment. It was very well for us as specialists to discuss new treatments, but we should not give them to the general practitioner until we were quite sure that they were good, and especially should

not confuse him with new treatments until we were quite sure that they were new. He had worked much with fixed dressings and varnishes, and some years ago had described such a varnish as had the reader of the paper. He was glad to confirm the reader's claim regarding the utility of the emulsion-dressing, but could not concede to him that it was new, as there are many other varnishes made with gums and fats. He did not believe that any varnish which is soluble in water can prevent a great amount of evaporation from the skin.

A NEW METHOD OF TREATING THE VEGETABLE PARASITIC DISEASES OF THE SKIN.

DR. H. J. REYNOLDS, of Chicago, Ill., read a paper with the above title before the Section in Dermatology and Syphilography, of which the following is an abstract :

First, the parasiticide must be applied so as to reach the bottom of the hair-follicles in favus, ringworm of the scalp, and barber's itch. He proposed to apply the medicament to the diseased part and place over it the positive pole of an electric battery, and the negative upon some other part of the body, and induce the penetration of the solution to the deeper parts by a well-known law of electro-physics. He uses a battery composed of a large number of small cells, such as is used for the removal of hairs. The strength of the current must vary with the sensitiveness of the parts,—five to fifteen cells, according to the feelings of the patient. Where there is much hyperæmia the current must be weakened. Cocaine, applied in this way, produces anæsthesia of the whole scalp. The surface is first to be thoroughly cleansed. Then saturate the sponge of the positive electrode with the parasiticide solution and place over the diseased patch, and the moist negative sponge over the skin of some other part of the body. A one per cent. solution of the bichloride was the parasiticide employed in the cases reported. He had only had an opportunity to thus treat three cases, but all have been so successful as to give him great confidence in its usefulness.

RECENT VIEWS AS TO THE PATHOLOGY AND TREATMENT OF TUBERCULOSIS OF THE LARYNX.

MR. LENNOX BROWNE, of London, read a paper before the Section in Laryngology with the above title.

The tubercular bacilli are generally ad-

mitted as a cause of specific laryngitis. Entrance is effected through the air-passages, and they are especially liable to accumulate in the upper parts of the lungs, where there is less respiratory action. The disease is usually secondary to pulmonary tuberculosis, and may be due to infection from the bacilli in the sputa coughed up and inoculating some abraded or unhealthy and irritated portion of the larynx, or the germs may find their way thither through the lymphatic system. The bacilli, like all parasites, act as an irritant, and eventually cause breaking down of the tubercular deposits.

They must have an unhealthy or abraded surface on which to locate and thrive, and are prone to choose some weak point. Whether carried by the air, sputa, lymphatics, or general circulation, cases are recorded of infection through wounds and teeth that have been extracted. The author of the paper quoted cases confirming the same.

The state of the health and the assimilation of food, together with tissue-nutrition, have more to do with the development of tuberculosis than have locality or climatic conditions. Not only may we have laryngeal tuberculosis as a secondary infection, but we find cases where it is primary. The laryngeal symptoms may be the first to attract attention, and even become far advanced before pulmonary lesions can be detected. This is confirmed by many observers. The bacilli are recognized in the sputa, there is pain in the larynx, and difficult deglutition.

The larynx presents the specific appearance. We find the infiltration, swelling, and ulcers, but still can detect no pulmonary lesion. There must have been some neglected chronic laryngitis, or some solution of continuity when exposed to the presence of these germs. Cases are reported where these local symptoms have yielded to treatment before pulmonary complications were added, and the patients were discharged apparently cured.

Treatment.—Where the general system is not broken down, or the disease advanced to the lungs, sea- or mountain-air and high altitudes, especially in pine regions, are of vital importance. Oxygen, pure air, and the absence of germs are here more to be relied on than the thermal or climatic agents. Dr. Moore has ceased to advise the inhalation of medicated steam, but prefers oxidizing agents. Inhalations of vapor from turpentine, oil of eucalyptus, and menthol he has used with success.

It is well established that tuberculosis is a blood-poison, as are pyæmia, septicæmia, and the like. Germicides should be used, and benefit will result. He places great confidence in atropine, not only as a sedative, but as a germicide as well. Arsenic often works in the same manner as does mercury in syphilis. So, also, do the salts of calcium, where there are tubercular deposits. The aniline treatment has not been a success, and the gaseous injections are still on trial. Experiments with sulphuretted hydrogen show temporary improvement, with diminution of the amount of sputa expectorated, less pain, and less distress from persistent cough. Still, the permanent benefit is doubtful. This treatment needs careful supervision, and should not be trusted to the patients or their friends. The local treatment of tubercular laryngitis gives the best results, especially where systemic treatment is also employed to maintain health and nutrition. Use cocaine, and employ the galvano-cautery or lactic acid to destroy the deposits and induce healthy healing of the parts.

Where the infections are local, our success is in proportion to their accessibility.

He does not like iodoform or iodol dissolved in ether, as the ether is too much of an irritant, and prefers a brush made with cotton to the spray, in that it coats the surface better and is pressed into folds which are protected from the spray by the spasm of the larynx. The continued use of the spray he considers dangerous to the ciliæ of the epithelial cells. Local and systemic sedatives are emphatically called for. Insufflation is not as good as where emulsions are made with acacia, as it is apt to form cakes. Cocaine gives temporary relief, but morphine, belladonna, and balsam are more permanent in their relief of both pain and cough.

The surgical measures are to scrape away the deposits with curette or forceps, under cocaine, and apply lactic acid. Do not stab or incise; it may relieve tension and congestion, but is bad in that it gives new foci for infection. For the same reason it is better not to remove glomerulata unless respiration is seriously interfered with. Tracheotomy, for the purpose of giving rest to the larynx, is useless, and worse. The larynx does not then receive the necessary air and oxygen, and bacilli-infected mucus accumulates. The cold and dry air irritates the lungs and may induce pulmonary complications. Besides, the wound may become infected. Intubation of the larynx likewise causes too

much irritation and aggravates the trouble, independent of the risk of blocking up the tube. Even refrain from removing an elongated uvula. He does not approve of the recent suggestion of extirpating diseased portions.

Many apparent cures are reported, and he has had such cases himself, but is inclined to doubt their permanence. We can improve the condition of the larynx, stop pain and cough, cause better assimilation of food, and improve nutrition. There result local relief and apparently satisfactory results, but scarcely a cure, as claimed by Schmidt, Bosworth, and others.

Important Suggestions.—1. Early diagnosis and treatment. 2. Do not be carried away with new remedies. 3. Never be too active in destroying tissue; heal instead. 4. It is better to observe facts and be influenced by the experience of many, than by the new ideas of the few.

ON THE PHARMACOLOGY OF SOME BODIES DERIVED FROM MORPHINE.

DR. RALPH STOCKMAN, of Edinburgh, read a paper with the above title before the Section in Therapeutics.

The experiments were conducted jointly by D. B. Dott, F.R.S.E., and Ralph Stockman, M.D. The relationship between chemical constitution and physiological action must always be a subject of deep interest to pharmacologists. In this short paper they proposed to mention briefly the changes in action resulting from various modifications in the constitution of morphine.

How, in 1854, by acting on morphine with methyl iodide, obtained a body which he named hydriodate of ethylmorphia, and which he regarded as a substitution product, the methyl iodide being supposed by him to replace one of the hydrogen atoms in morphine. In the light of our present chemical knowledge How's body may be regarded as an addition product, iodide of methyl (CH_3I) being simply tacked on to the morphine molecule.

In 1869, Crum Brown and Fraser investigated this body among others, and showed that the original action of morphine is quite lost, and a curare action substituted in its stead. From their nomenclature there can be no doubt that these observers regarded such bodies as addition and not as substitution compounds. Notwithstanding this, the authors find that in all text-books and reference-books these substances are always named and described as if they were substitution and not

addition bodies. It is at present generally held that the substitution of methyl for hydrogen in an alkaloid causes the latter to act like curare, no matter what its original action may have been. The addition products, however, are very different in action from the substitution products.

The formula of morphine is $\text{C}_{17}\text{H}_{17}\text{NO}_3(\text{OH})_2$, and it contains, therefore, two molecules of hydroxyl. It is the hydroxyl-hydrogen atoms which are replaced most easily by alcohol radicals. With regard to the action of morphine it may be divided into two stages,—(1) narcosis, succeeded by (2) tetanus. Methylmorphine, $\text{C}_{17}\text{H}_{18}(\text{CH}_3)\text{NO}_3$, is morphine in which one H has been replaced by CH_3 . Codeine has the same constitution, and this body is simply codeine prepared artificially from morphine. The action is exactly the same as that of codeine derived directly from opium.

Ethylmorphine, $\text{C}_{17}\text{H}_{19}(\text{C}_2\text{H}_5)\text{NO}_3$, has the same action exactly as methylmorphine.

Acetylmorphine, $\text{C}_{17}\text{H}_{18}(\text{C}_2\text{H}_5\text{O})\text{NO}_3$, and diacetylmorphine, $\text{C}_{17}\text{H}_{16}(\text{C}_2\text{H}_5\text{O})_2\text{NO}_3$, have a similar action to the two preceding bodies. That is, they produce narcosis in very small doses, which is followed by tetanus when larger doses are given. All these bodies are much more active than morphine, and smaller doses are required. In dogs, however, they produce much greater distress and much more marked vomiting and diarrhoea. From examination of their action, the authors think that none of them is in a position to replace morphine clinically.

SO-CALLED ANTISEPTIC ACTION OF CALOMEL WHEN GIVEN IN LARGE DOSES.

DR. GEORGE S. HULL, of Chambersburg, Pa., read a paper with the above title before the Section in Therapeutics.

In cases of dysentery most prompt results in relieving tormina and changing the character of the stools were manifested. It acts as a cholagogue, producing a free flow of bile, sweeping out the contents of the bowel, and as a mercurial it exerts an antiseptic action. In cholera its usefulness in large doses has been advocated by some and denied by others.

In the discussion the relative value of large and small doses of calomel was freely considered by the members of the section.

In closing the discussion, Dr. Hull said that he was dealing with epidemic dysentery, and not with ordinary dysenteric conditions.

The first effect of the calomel is to empty the bile-ducts and get a large flow of bile, and relieve the congestion of the liver and intestinal vessels. The second effect is due to the solution of the mercurial in bile, as pointed out by Headland, and this probably acts as an antiseptic in the bowels. The object is not simply to purge the patient, but to obtain a copious bilious discharge from the action on the liver. Where the tongue was most coated he got the best results. He believed that patients are killed by the use of opium and astringents.

*NOTES ON THE TREATMENT OF PHTHISIS,
MORE PARTICULARLY THAT BY INTRA-
PULMONARY INJECTION.*

R. SINGLETON SMITH, M.D., London, F.R.C.P., Physician to the Bristol Royal Infirmary, England, read a paper on this subject before the Section in General Medicine on Thursday, September 8. Since the last International Congress at Copenhagen, in 1884, numerous attempts have been made to do more than had previously been attempted for a disease in which the *vis medicatrix naturæ* does so little. The reader of this paper briefly summed up the various methods which have been recently suggested since the discovery of the bacillus of tubercle, and expressed his belief in the possibility of benefit by treatment directed towards the destruction of the bacillary growth. He reported the result of his experience with regard to gaseous rectal injections, and said that in consequence of the absence of all indications of benefit he had given up this method entirely. He alluded to the work done by Professor Pepper, of Philadelphia, and Drs. Beverley Robinson and White, of New York. In carrying out the method of intra-pulmonary injections suggested by these and other workers he had met with partial success in a series of cases reported in the *British Medical Journal* of 1886.

In consequence of the proved utility of iodoform in chest-disease, as shown by a steadily-increasing mass of evidence since its first introduction for this purpose by Professor Semmola, in 1878, and supported by a series of cases presented to the International Congress of 1884, in which the author found increase of weight, improved appetite, diminution of temperature, and general improvement, under the administration of iodoform given by the alimentary canal, it was thought that

iodoform would be the best substance to employ for injection into the parenchyma of the lung. The clinical utility of iodoform being the ground on which its use for this purpose has been founded, the evidence is not shaken by any statistics as to the comparatively feeble powers of the drug as a germicide.

The insolubility of the drug is the chief difficulty; various solvents have been used, but with only partial success. Ether is objectionable because of its effects on the brain; giddiness and other feelings of discomfort rather alarm the patient, and give rise to an unwillingness to have a frequent repetition of the injections. Eucalyptus oil is irritating: two cases were mentioned in which acute pleuritis, with much pain, rise of temperature, and effusion had followed the injection of an iodoform solution in oil of eucalyptus. The vaseline oil, either alone or in combination with eucalyptol, had also been used, but the author still considers the question what is the best fluid to inject to be still unsolved. He did not advocate the use of solutions containing free iodine or bichloride of mercury, and he would not in future employ any fluid for injection into the lung which had not previously been tested hypodermically; if it gave rise to much inflammatory irritation in the subcutaneous cellular tissue, he would not venture to inject it into the lung. He was of opinion that injections into cellular tissue might possibly be of some little service, although there was as yet not much reliable evidence on this point, but they would serve as a reliable test whether any given fluid was suitable for deep intra-pulmonary injection.

It is true that if iodoform be of use, as the clinical evidence indicates, then it is likely to be of far greater utility when injected, even in small quantity, into the focus of a diseased patch than when given in larger doses diffused throughout the whole body. Such injections have been shown to be not especially hazardous. Even the cases in which pleuritis has occurred had recovered completely from the attack in the course of a few days, and possibly the pleuritis was due to the failure of the fluid to pass beyond the pleural cavity into the lung-substance. Nevertheless, the author would not advocate the use of such injections in cases which were hopeless, neither would he employ them in cases where other and less active measures were accomplishing the object in view. He concluded his paper by urging perseverance in spite of failure, and by expressing his belief that what

as yet was only a tentative investigation would ultimately result in numerous and signal successes.

DEVENTER'S METHOD OF DELIVERY OF THE AFTER-COMING HEAD.

DR. JOHN BARTLETT, of Chicago, Ill., presented a paper with the above title before the Section in Obstetrics, supplementing the paper with a demonstration upon the phantom.

Deventer spoke in the most confident manner of the success and safety of podalic version, and of the ease with which the head could be delivered, but did not describe his method, which, however, Dr. Bartlett had found mentioned in Smellie's work. Deventer's method was shown to consist of a reversal of the so-called Prague method, in that the body of the child was carried far backward towards the perineum, with the view of turning the occiput out from under the pubes, the anterior surface of the neck resting on the perineum. At the beginning the occiput of the child was turned forward so as to come under the pubes as the child was drawn down. The arms were *not* to be drawn down, but left up alongside the head, being placed so as to come anterior to either parietal base. The delivery by traction backward upon the body was to be aided by pressure made immediately above the pubes, the wedge formed by the head and arms being decomposed by the withdrawal of the larger transverse diameter of the head from between the arms, as descent of the head accompanied by extension occurs. The mechanism was only favorable when the occiput was anterior. Deventer never lost a child or tore a mother. The arms, being left up, protected the neck of the child and allowed a passage for the cord alongside of them, so that haste was not as necessary as with ordinary methods, and, occupying a broad and yielding part of the pelvis, they did not obstruct delivery. The method was a plausible one, and certainly worthy of trial in suitable cases.

THE CURABILITY OF DETACHMENT OF THE RETINA.

PROF. X. GALEZOWSKI, of Paris, France, opened the session of the Section in Ophthalmology on Thursday, September 8, by reading a paper with the above title. He stated that the pathology of the disease is not entirely clear.

The writer had observed in twenty years,

among 152,000 persons, 789 detachments, of which 87 were in both eyes, 63 in emmetropic and hypermetropic eyes, and 194 were traumatic; 13 occurred after extraction of cataract, 18 were syphilitic, and 4 in sympathetic affections. Tumor was found in 10 cases. Twice only he found detachment in retinitis albuminurica, although he frequently saw this affection. Cataract is very frequent in detachment of the retina.

Occasionally tearing of the retina is noticed, with the corpus vitreum introduced behind the retina, between the choroid and retina. He could say that the rupture of the retina is not so frequent, and considers it the consequence and not the cause of the detachment. Professor Graefe has said that the detachment is not curable, and the function of the retina is not restored. Dr. Galezowski had seen a case which showed alterations in the retina at the place of detachment, which had been completely cured. The patient gave the usual history of trouble with the vision, coming on suddenly and continuing for one or two or three months, with afterwards recovery of sight. He explained the appearance of the fundus as seen by the ophthalmoscope, and illustrated them on the blackboard.

The conditions predisposing to detachment were said to be (1) choroiditis; (2) liquefaction of the corpus vitreum. In treating these cases he begins with antiphlogistic treatment, atropia, rest, etc., and he had in seven cases a complete cure,—the retina completely adherent, and around the line of the separation atrophy, with pigment-deposit and choroiditis disseminata. The first indication is antiphlogistics. Apply every month two, three, four, or five leeches, then atropine, and warm and cold compresses alternately, and in the intervals between the leeches he applies derivative plasters. Inside of five months he has completely cured detachment of the retina. Mercury and potassium iodide are also useful where exudation is present, or in cases of constitutional disease.

Fifteen years ago he proposed iridectomy to stop the inflammation of the choroid, but it did no good in that way, although it stopped the iritis. Now he proposes a new operation. He considers the exudation behind the retina as being of the same character as the effusion in pleuritis or peritonitis, and has had an instrument (which he exhibited) made to aspirate the fluid. The instrument is a syringe with a stop-cock and an aspirating-needle. He introduces the needle through the sclerotic at a considerable distance be-

hind the ciliary body, and passes it into the globe for some distance. Then he exhausts the air by drawing out the piston. If the needle-point is too far in, no fluid appears in the barrel of the syringe, but on withdrawing the needle gradually the fluid appears, and one, one and a half, and two grammes are generally obtained. There is no inflammation after the operation. By this means two out of seventeen cases operated on were completely cured, and there is a certainty of amelioration in all cases.

In old cases he introduces a curved needle from behind forward through the sclera and the detached retina, before introducing the aspirating-needle, and when the fluid is drawn off a catgut ligature is drawn through as a seton and brought tight.

SEBORRHŒAL ECZEMA.

DR. P. G. UNNA, of Hamburg, Germany, read a paper (with microscopic demonstration) on "Seborrhœal Eczema" before the Section in Dermatology and Syphilography. The author does not consider that the diagnosis "acute" or "chronic" eczema is a sufficiently exact and scientific one. For example, there are three distinct types of infantile eczema of the face, viz., a nervous, a tuberculous, and a seborrhœal. The nervous type is seen in the eczema of dentition, appearing upon a perfectly sound skin, usually first upon the cheeks and then upon the forehead. The eruption itches in proportion to the strength of the infant and the thickness of the epidermis. The vesicles, at times, suggest in their appearance and their reddened base herpes zoster, but the marked symmetry of the lesions and the tendency to relapse would prevent such a diagnosis. Seborrhœal eczema is entirely different, in that the skin is not in a previously healthy condition. A seborrhœa has existed upon the scalp probably a few weeks after birth, which often spreads over the upper portion of the face after becoming somewhat moist. There is less itching than in the eczema of dentition. For the latter affection a zinc-ichthyol ointment is recommended to be applied and covered with a mask, together with the bromide of potassium, internally, to allay nerve-irritation. In seborrhœal eczema sulphur should be added to the zinc ointment. Ichthyol is useless, but resorcin acts well.

Dr. Unna regards all so-called dry seborrhœas as chronic inflammatory processes of the skin, and his studies convince him that

there is no hypersecretion from the sebaceous glands which can clinically be considered a dry seborrhœa, produced by a deposit upon the surface of the product of these sebaceous glands. The disease which Unna has named *eczema seborrhoicum* is dependent upon a condition of, or rather change in, the coiled or sweat-glands, giving rise to the secretion of fat by them. An increase of fat upon the surface indicates increased activity when it proceeds from the sebaceous glands, but when the sweat-glands pour out fat it is because of the death of their endothelial cells.

Almost all seborrhœal eczemas have their starting-point in the scalp. Three forms are described. In one, *eczema seborrhoicum* begins as a latent catarrh of the scalp, and goes through the stages of scaly formation and dryness, finally ending as a hyperidrosis oleosa. In the second, the scales heap themselves up between the hairs into fatty crusts, and cause the hairs to fall out. A corona seborrhoica upon the forehead, at the margin of the hair, is described, which is typical of this form of the affection.

The third form is that in which the catarrhal appearances are the most pronounced, and in which "weeping" occurs, especially about the temples and eyes. This follows a simple itching pityriasis, and produces the appearances of a moist, shining eczema. A pityriasis or a seborrhœa may exist upon the scalp, while at the same time an eczema is present upon the face. The chest is affected with the crusty form almost exclusively.

Upon the arms there is a predilection for the flexor surfaces, which is explained by the rôle the sweat-glands play in *eczema seborrhoicum*.

Upon the legs, early in the disease, we find only the large papular and crusting forms.

Patches of seborrhœa about the mouth and nose of old people are often the starting-points of carcinoma. In almost all cases of *eczema seborrhoicum* of the scalp, a simple, itchy scaliness of the ear is observed. A patch of *eczema seborrhoicum* is extremely stationary, remaining for years possibly without much change in size and giving rise to only slight symptoms. Beginning upon the scalp or head, as a rule, it extends to other parts below in a very gradual manner, especially locating upon the face, sternal and intra-scapular regions. This course is so the rule as to be regarded as pathognomonic, as no other eczema or psoriasis runs this course.

When the whole body becomes involved it

resembles closely pityriasis rubra. Psoriasis is often confounded with seborrhœal eczema. The latter attacks the parts near the median line of the body, and is more stationary than psoriasis. It is preceded by a local seborrhœa, and the scales and crusts have a decidedly fatty character. The patches have also a peculiar configuration, and spontaneously flatten out in the middle or upon one side. The prognosis is more favorable than in psoriasis. The cure is not easy because the deep-seated sweat-glands are implicated. Sulphur is the great remedy for the disease. More active remedies for the scaly and crusty forms are pyrogallol and resorcin. Internal treatment is seldom required. Once cured, prophylactic measures, such as hygiene of the skin, must be employed.

IODOL IN SURGERY.

DR. GEORGE ASSAKY, of Bucharest, Roumania, read a paper on "Iodol in Surgery" before the Section in Surgery on Friday, September 9. The conclusions arrived at were: (1) Wounds unite under iodol by first intention. This union, however, being the result of various and complex conditions attending operation, it is not possible to attribute to iodol alone the absence of suppuration and inflammatory conditions. In wounds which gape and suppurate, iodol is an excellent antiseptic. It rapidly retards suppuration, renders it odorless, reduces the frequency of dressing, and hastens considerably cicatrization. In ulcerating or gangrenous wounds iodol aids to resist the destructive process, and changes the wound, after a variable time, to a healthy, granulating condition. This action of iodol extends itself to hard chancres. In case of soft chancres the result is variable. Sometimes it transforms them into a simple wound with brief delay; at others it is insufficient for this purpose, and it becomes necessary to employ in addition, locally, antiseptic lotions.

The same is true with reference to open venereal buboes of the groin. The powdered iodol has this advantage over iodoform, that it is free from odor and is not toxic in its effects.

(2) Doses of iodol of from 0.40 centigramme to 2.0 grammes daily produce no functional trouble, even if continued a long time.

These doses give marvellous results in tertiary syphilis and in scrofulous affections. In the secondary stage of syphilis, taken inter-

nally, it rapidly destroys the syphilitic manifestations. Iodol seems to aid the general nutrition and increase strength and flesh. It is indicated in all cases of specific malnutrition.

Iodol is an antipyretic. In acute infectious diseases, such as erysipelas, etc., it causes a rapid fall of temperature.

THE TREATMENT OF ABSCESES AND ULCERATIONS OF THE CORNEA WITH JEQUIRITY.

DR. E. SMITH, of Detroit, Mich., read a paper with the above title before the Section in Ophthalmology on September 9. He remarked upon the experience, common to all, of the difficulty in procuring the absorption of pus in the cornea, and noted the existence of the same tendency in all closed abscesses. The best means of arresting suppuration and of getting rid of the pus when formed has engaged the attention of the writer, with many others, for years. A paper on the above subject, in the spring of 1883, with another published in October, 1883, gave the result of his observations up to that time. He had since had many cases of ulceration of the cornea speedily relieved, and an astonishing clearing up of the cornea, after its use. He believes the remedy affects the proliferation in corneal corpuscles. After explaining his impression of the mode of action of the remedy, he proceeded to describe his manner of using it. He does not use a strong preparation, and aims not to produce a sharp inflammation, as is done in trachoma. He uses a three per cent. solution, or a very minute quantity of the powdered seed. It is applied sparingly, till a mild catarrhal inflammation is set up, characteristic of the remedy, and in some cases there may be slight membrane. The object is to avoid a high degree of reaction. The eye is kept washed out with a two per cent. solution of boric acid, and the result is almost uniformly surprisingly good. The corneal cicatrix is often hardly apparent to any one but the patient.

DR. GALEZOWSKI, of Paris, France, did not like jequirity. In his observation it had frequently produced ulceration and destruction of the cornea and synechia anterior, and in some cases enucleation had to be made to avoid sympathetic trouble. He thought jequirity exerted a very bad action on the cornea. The modification in Dr. Smith's method is doubtless in the amount of the

drug used. Dr. Galezowski thought it a dangerous method.

In intermittent fever he had found ulceration of the cornea, which yielded to the administration of quinine. In another case, lasting for several months, after the extraction of a tooth, cicatrization occurred. The best treatment for corneal abscess and ulcer is the antiseptic method. He applies the powdered iodoform directly to the surface three times a day, under cocaine, and uses the steam douche two or three times a day, ten minutes at a time. When it is not doing well cauterization with a solution of nitrate of silver, 25 centigrammes to 10 grammes, may be done one or two times every day.

DR. RICHEV, of Washington, D. C., wished to know whether scraping the ulcer before applying the remedy had not been found of advantage.

DR. SMITH, in closing, said that Dr. Galezowski had used jequirity in trachoma, in the way described by De Wecker, till he obtained marked diphtheritic membrane. In these cases it was the swelling and chemosis that caused strangulation and loss of cornea. He should hesitate to use jequirity in sthenic cases; it was the asthenic cases requiring stimulation that were suitable for this treatment.

THE CHEMISTRY AND PHARMACOLOGY OF THE NITRITES AND OF NITRO-GLYCERIN.

A paper with the above title, by GEORGE ARMSTRONG ATKINSON, M.B.C.M., was presented, and in the absence of the author was read by DR. RALPH STOCKMAN, of Edinburgh, before the Section in Therapeutics on Thursday, September 8, fourth day.

The action of the salts of nitrous acid resembles closely those of the acid which is the essential basis of this group of medicinal agents. Nitrous acid is remarkably unstable; in watery solution of $\frac{1}{100}$ it may be used for a day or two for experimentation, but it has no advantage over a solution of nitrite of sodium, which possesses identical effects in so far as an acid can be considered identical with one of its salts. Our knowledge of the action of the nitrite group has been chiefly derived from a study of the effects produced by nitrite of amyl. Since here the base (amyl) has a decided action of its own, it is necessary to select a salt in which the base in its combination possesses no well-marked physiological activity. The resemblance between the action of sodium nitrite and amyl nitrite has

been pointed out by Gamgee, Lauder Brunton, Hay, Leech, and others. Barth described its highly poisonous qualities. Binz showed that it caused death from general paralysis, especially of the muscular system, no convulsions preceding the fatal issue. Reichert considered it identical in its toxic effects with potassium nitrite. Its effects may be summed up as a paralyzer of muscular tissue, non-striated muscle being affected less quickly than striated. The brain-centres are also affected. The blood becomes of a chocolate color in mammals (methæmoglobin), respirations are slowed, temperature slightly lowered. Death occurs in frogs from cessation of respiration; after the heart has stopped its movements, it is found in full diastole and quite inexcitable.

Post-mortem rigidity comes on early. In rabbits, 3 grains were a fatal dose in one three pounds in weight. The same appearances were found post-mortem. In man, small doses (8 grains) produced great tendency to faintness and considerable acceleration of pulse, and decided lowering of arterial tension. Paralysis of respiration is due to the effect of the nitrite on the muscular system chiefly, but also in part to the effect on the medullary centre. Small doses slightly increase the flow of urine; large always diminish it. Urea and uric acid are almost unaffected. Sugar appears in the urine of rabbits after some hours, if the animal be kept very decidedly under the influence of the drug, but rapidly disappears if the administration of the drug be stopped. The nitrite is largely destroyed in the system, being partly, however, excreted as nitrate, partly, probably, as urea; a portion of it is excreted as nitrite.

The pharmacology of the other nitrite is briefly dismissed. Nitrite of potassium, nitrite of ethyl, nitrite of amyl, act in very similar manner to the sodium salt. Nitro-glycerin acts partly as a nitrite, and partly *per se*. In small doses it exerts the nitrite effect as a paralyzer; in large doses it produces convulsions.

DR. MURRELL, of London, England, referred to his discovery of the usefulness of nitrite of amyl in the condition of angina pectoris, and he always advised patients to carry the medicine in a small bottle. The pearls he considered too expensive for use. The taballæ (Ch. B.) of nitro-glycerin, made with chocolate, he considered dangerous from their resemblance to confections. He has used nitro-glycerin in one per cent. solution (dose mg v-xv) in cases of neuralgia of the

fifth nerve, surgical shock, asthma (spasmodic and cardiac), and reflex neuroses. He preferred this in epilepsy to the nitrite of sodium, which had been recommended by Dr. Law. In angina, patients can take 15 minims when they feel the attack coming on; such patients should carry a small bottle with them for immediate use when they feel the attack coming on, otherwise they might perish before the agent could be obtained. He gave an amusing instance of the difficulty of obtaining nitro-glycerin in England at present.

ON THE MAXIMAL DOSES OF DRUGS.

DR. L. LEWIN, of Berlin, read a paper with the above title before the Section in Therapeutics.

Of the many difficulties which pharmacotherapy has to strive against, the dosage of medicine is by no means the least. Variation in dose arises (1) from the differences (a) between one person and another; (b) between single individuals at different times; (c) between the intensity of the disease in men suffering with the same affection; (d) between diseases in which the same drug is used. (2) From the variability in the activity of the greater part of our remedies.

At the same time it is possible and desirable to establish the usual dose of agents which are active in relatively small quantity, and which readily produce toxic effects when the dose is increased. Two groups of preparations fall under this head: (1) Plants (crude) and plant-products, and their pharmaceutical representatives; and (2) chemical substances such as metalloids, metallic salts, and carbon-compounds.

The first group is almost universally inconstant in its effects, and thus far an international agreement as to their maximal doses has not been possible. The remedies of the second group, on the contrary, are nearly uniform, and the doses beyond which they cannot be given without danger can be determined by physiological experiment; but although the basis for such agreement is tolerably broad, yet the statements given in different pharmacopœias in many cases vary greatly. Such variation can be easily explained in the case of the first group, but becomes incomprehensible in the second.

From the results of his own observation and a comparison of the most of the pharmacopœias which give maximal doses, the author had constructed a table of the ordinary

maximal doses of many of the drugs belonging to the second group, which he appended to this communication. Such a list should be added to the pharmacopœias of such countries as have no maximal dosage, for the convenience of the practitioner, who thus would be enabled to prescribe such drugs with confidence, even if they should not be generally used in his own country. From this Congress he hoped the influence would go out which would make such an international agreement possible.

RESORCIN AND ITS PREPARATIONS.

DR. JUSTUS ANDEER, of Munich, read a paper with the above title before the Section in Therapeutics. In this paper the author briefly gave the result of ten years' experience with pure resorcin. He had found it non-toxic, antiseptic, and possessing many advantages over carbolic acid, being free from odor and non-corrosive to the skin. He had obtained excellent results from it in eczema, in keloid, and in parasitic skin-diseases, as well as diseases of mucous membranes. In the form of keratine-coated pills it can be given for bronchitis, or in combination with castor oil (one to two per cent.) for diarrhœa and dysentery. For local use it may be combined with cacao-butter as a salve, or it may be made up into a soap of varying strength, from one per cent. up. Failure to obtain satisfactory results from its use may arise from not using a chemically pure resorcin, or from giving it in insufficient doses.

DR. LEWIN said that all are familiar with the writings of the lecturer upon the subject of resorcin. He thought that by devoting exclusive attention to this one member of a group the others might be in danger of having their value slighted. What is the value of thymol? What does resorcin accomplish more than phenol, carbolic acid, and others of this class? He questioned the statement that resorcin is not toxic, since it can, in large doses, present a condition of cerebral confusion and excitement which closely resembles mania.

DR. ANDEER replied that the agent was an efficient antiseptic, tasteless, odorless, and, in ordinary doses, free from toxic effects. He considered it a valuable addition to our therapeutic resources, and superior to phenol and thymol in many respects.

Correspondence.

PARIS.

(From our Special Correspondent.)

With the month of August the *season of vacation* has begun. The schools of medicine and of pharmacy have closed, and the professors have left the city, together with the four thousand medical students and the nine hundred pharmaceutical, or most of them. The library of the faculty closed its doors on the 1st, that of the College of Pharmacy on the 15th, and all the medical and pharmaceutical societies, as well as most of the scientific, have adjourned their meetings till October. The Academy of Sciences alone, faithful to time-honored precedents, continue their weekly sittings, but with so limited an attendance this year that they intend next summer to take some vacation, like the rest of the scientific world. And yet lately they had the visit of Dom Pedro, the emperor of Brazil, no doubt so well remembered by Americans, who, as one of the eight foreign corresponding members of the academy, attended several of the meetings, and took a share in the discussions.

But it is an ill wind that blows nobody good. While the physiologists, biologists, and toxicologists, both medical and pharmaceutical, are thus depriving Paris of their presence, the unfortunate dogs, cats, and guinea-pigs enjoy some rest from the experiments which they share in so interested a fashion. *Vivisection* and toxicology are no doubt useful and even fascinating studies, yet it cannot be denied that much unnecessary and wanton cruelty is practised under the cloak of scientific investigation. True, there is here a powerful society for the protection of animals, and also, it seems, an *antivivisection society*, aided by its British homonyme; but their first united effort, made the other day in a most injudicious manner, was a failure. After advertising a public meeting with bills partly in French and partly in English, they chose for a lecturer Madame Marie Huot, the same who hissed at the unveiling of Claude Bernard's statue, interrupted a medical lecture by striking the professor on the head with her umbrella, disturbed a pro-Pasteur meeting with constant interpolations, and in general made herself obnoxious by sensational vagaries. The meeting has been disastrous to the antivivisectionist cause, Mme. Huot having boasted of being a freethinker and a socialist, and wildly attacked nearly every

prominent scientific man. Continual uproar and disorder prevailed throughout, and the real aim of the meeting was lost sight of, the lecturer's own supporters being disgusted with her absurdities. And yet the antivivisectionists have some ground for their complaint. No one thinks of prohibiting vivisection, but some sort of regulation is not quite unnecessary.

If dogs and cats and the higher animals appeal to our feelings of mercy, the insects as a class generally find but little sympathy. Who has any love for the house-fly, for instance? It is by all conceded to be a plague and a nuisance. But scientists have more serious accusations to bring against it, for the house-fly is known to often be the means of spreading some contagious diseases. And now another charge is added to the list. Drs. Spillmann and Haushalter are of opinion that *flies spread the bacillus tuberculosis*. In a memoir read before the Academy of Sciences they have described experiments made with some of the flies that hover so pertinaciously around the spittoons of tuberculous patients. They have found living Koch's bacilli in both the abdomens of the flies and their excrements, and have no doubt, considering the persistent vitality of the bacillus, that such flies may become active vehicles of the contagion, near and far. As a prevention, they recommend that the spittoons be provided with close covers, and be cleaned with boiling water or a five per cent. solution of carbolic acid.

Some time since allusion was made to the project of coating with sheet lead the inside of the Arcueil aqueduct, which supplies Paris with its purest water—comparatively. The well-known sensitiveness of the public to any possible *lead contamination of drinking-water* stirred up considerable opposition, although chemists had declared beforehand that, considering the composition of the water, no danger could be apprehended. As the metallic lining was absolutely necessary, the work was done; but, to settle the question, a commission, composed of MM. Proust, Gautier, and Schutzenberger, was directed to analyze the water, and report upon its quality after its flow through a mile or so of sheet lead. Without entering into unnecessary chemical details, it may be of some interest to know how the operation was performed. One month was allowed to elapse after the completion of the lining to let things take their natural course. Then the commission collected fifty litres of the water above the

conduit and fifty litres immediately below, and both specimens were treated separately in precisely the same manner. The water, on being evaporated to two litres, let down a precipitate of carbonate of lime, which was separated by decantation; the clear liquid upon further evaporation to half a litre afforded a sediment of sulphate of lime, which was filtered out and preserved. A stream of hydrogen sulphide was now run through the clear liquor, slightly acidulated with acetic acid, and both specimens remained free from colored precipitate or even the faintest brown coloration. The sediments were next examined. On being macerated with dilute acetic acid, a portion was dissolved and a portion remained insoluble. The soluble portion gave for both specimens negative results with hydrogen sulphide. Finally, the insoluble portion, consisting mainly of sulphate of lime, was macerated for twelve hours with a solution of ammonium tartrate, in which sulphate of lead is soluble. Hydrogen sulphide proved that the liquor was equally free from metallic contamination. In consequence the commission, on reporting to the municipal council, gave it as their conclusion that the water of the river Vanne is, so far as lead is concerned, unaffected by its flowing through the Arcueil aqueduct. All chemists knew as much before the analysis was made, but nothing else than so thorough an examination would have satisfied public feeling.

While chemicals are under consideration, it may be well to end with the notice of an interesting discovery about *insoluble salts*, related by MM. W. Spring and G. de Boeck at the last meeting of the Paris Chemical Society. For theoretical reasons they think solubility and insolubility are only relative terms, and depend on several outward causes, hitherto not well understood. However it may be, they have succeeded in preparing *cuprous sulphide soluble* in plain water, and stable enough to bear ebullition and filtration. As the fact is of concern to chemists only, suffice it to say that the sulphide is rendered soluble by prolonged washing, intended to remove the slightest traces of all foreign salts. But another compound interesting to therapeutists is *brown oxide of manganese*, which can also be rendered *soluble* in water by what they call washing *à l'outrance*. The operation is simple enough. MM. Spring and De Boeck prepare brown oxide of manganese by reducing permanganate of potassium with hyposulphite of sodium, and persistently wash the brown pre-

cipitate by decantation with distilled water until the oxide redissolves, a fact rendered sensible by the deep brown color of the liquors. The solution thus obtained keeps well for a reasonable time, but is immediately decomposed by filtering, or upon the slightest addition of almost any salt. At the same time, although somewhat different chemically from ordinary brown oxide of manganese, the solution consists of nothing but oxygen and manganese, and may, therefore, find useful applications in therapeutics. It differs thus chemically from the preparation known as dialyzed iron, which necessarily contains a minute proportion of chlorine.

PARIS, August 23, 1887.

PLACENTA PRÆVIA.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—I wish to report a case of placenta prævia that recently came under my care, and also wish to invite whatever criticism any of the readers of the GAZETTE may choose to make in regard to the management of the same, for criticism given in the right spirit is next to advice, and often more valuable to the young practitioner.

The history of the case is as follows:

Mrs. J., aged 38, mother of five children. Was first called to see her June 1, 1887, at 1.30 P.M. She was awakened out of a sound sleep by quite a profuse hemorrhage. I found her very nervous and excited over the occurrence, as she said nothing of the kind had ever happened to her before, and she did not know but she was going to have a miscarriage. The hemorrhage soon ceased, and upon assuring her that I thought that was not the case she became more calm. Upon questioning her, I found that she was somewhere between five and seven months in pregnancy, but could not tell the exact time. Upon examination I found the cervix long and soft, and the finger could easily be passed to the os internum. As this hemorrhage had occurred without any ostensible cause and without warning, I looked at it rather suspiciously. I said nothing though in regard to what I thought, but gave her some advice in regard to future exercise, etc., and left her. On July 15 again, at midnight, I was called to her bedside. Another hemorrhage had occurred in precisely the same manner as before, awakening her out of a sound sleep. This time the hemorrhage was very much greater than before, but not to any alarming extent, as it

ceased spontaneously soon after my arrival. Upon digital exploration I found the vaginal fornix soft and boggy, the cervix long, wide, and soft. There was no doubt in my own mind as to the diagnosis. I frankly told her what I thought the cause of the hemorrhage was, and that rest and quietness on her part was absolutely necessary if she expected to go her full time. On the 17th I was again hastily summoned to see her. She was walking about in the garden when the hemorrhage began. This time it was, indeed, alarming, for she must have lost several pounds of blood by the appearances. On the 18th a consultation was called, and my diagnosis confirmed. The placenta was thought to be nearly central. As Mrs. J. was a strong, healthy woman, my colleague thought by keeping her quiet she might go her full time, as he believed it must be nearly up. The child seemed quite vigorous, and it was decided to let nature take its course for a few days longer, at least, in hopes of saving it if possible. This time the hemorrhage did not cease entirely as before. Notwithstanding she kept her bed for the most of the time, there was a continued oozing and dribbling, especially when she attempted to stand on her feet. At midnight on July 24 I was again called. The hemorrhage had again taken a fresh start. Further delay was useless if the mother's life was to be taken into consideration, and I determined to act at once. As the external os was only dilated to about the size of a quarter of a dollar, I resorted to tamponing. This checked the hemorrhage for the time being and started up the pains. In about four hours I removed the tampon, found the cervix dilated to the extent that two fingers could easily be introduced. I detached the placenta as far as I could reach and ruptured the membranes, and by some external manipulation I brought down the head, this acting as a plug, and as soon as it became fastened in the pelvis the hemorrhage practically ceased. The second stage of labor lasted about an hour. As soon as the child was born the hemorrhage became fearful, and upon examination, to my astonishment, I found another child was there. I immediately introduced my hand into the uterus, ruptured the membrane. The child was lying in the transverse position. I grasped the feet, and brought the trunk down into the pelvis. A few sharp pains and the second child was born. The placenta was removed and the hemorrhage ceased. All antiseptic precautions were used during labor and also afterwards, and my pa-

tient made a good recovery. Both children were still-born, and I think by appearances the mother could not have been more than seven and one-half months in pregnancy. I have given a full detail of this case for two reasons,—first, because placenta prævia, and especially with twins, is not a common occurrence; and second, because I never saw the full details of the management of a case in print.

In looking up authorities on placenta prævia I find such men as Thomas, Hoffmann, Barnes, Taylor, Spiegelberg, and others recommend the induction of premature labor as soon as the diagnosis is established.

Ought premature labor to have been introduced in this case as soon as the diagnosis was established, or was the expectant method better until the time came when it was absolutely necessary to act to save the life of the mother? In this case we were in the dark as to the mother's exact time, and also to the fact of there being twins.

Yours respectfully,

F. T. FIELD, M.D.

ELROY, WIS.

GELSEMIUM IN SUN- OR HEAT-STROKE.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—I was called early in July, 1878, one day about sundown, to see a young man, aged 25 years, stricken with heat- or sunstroke; found a crowd of both sexes outside gazing through doors and windows at the sufferer inside, who was bereft of sense and tossing in violent convulsions on the floor; arms and legs like levers governed by steel springs, were flying out, knocking chairs, etc., in all directions, his body rolling and tumbling on the floor.

I directed five men to rush in, seize, and hold him on his back, one man to restrain each limb, and the fifth to hold his body down. Being unsafe to introduce a hypodermic needle into arm, I threw twenty minims F. E. gelsemium into the cellular tissue over the pectoral muscle, and then relieved him of restraint; his violence gradually subsided, and he regained consciousness within half an hour, and one hour afterwards was able to swallow hydr. submur., gr. x, pulv. ipecac., gr. xx, bicarb. soda, gr. x. I then left him, feeling safe as to the result of the emetico-cathartic. The next day's visit found patient completely recovered. No subsequent treatment required. This case might have been serious but for prompt relief. After working hard all

day Saturday he ran over town in the afternoon to lay in supplies for Sunday, hence the overheat.

The wonderful and unmistakably good effects of the gelsemium in this case, and to my observation the close alliance existing, so far as cerebral congestion obtains, in the pathological conditions of the subjects resulting from sunstroke and from opium-poisoning, induced me to adopt this remedy in the treatment of the case of opium-narcosis reported in the June number of the THERAPEUTIC GAZETTE.

In heat-stroke, however, we may surely expect to find the liver greatly engorged and perfectly torpid, hence the indication for an active cholagogue, the effects of which may be enhanced by combination with ipecac and soda. The ipecac not only relieves the stomach—which may reasonably be considered in a state of atony—of undigested and hurtful substances, but has very calmative and soothing subsequent effects.

Gelsemium may have marked effect on the motor tract of spinal cord, paralyze respiratory nerves, cause certain inferior animals to move backward, and produce death in one-drachm doses, but notwithstanding, when properly administered in *suitable doses proper to the occasion* I have found it invariably an equalizer of the circulatory system and a preventive to local and congestive tendencies. From the stand-point of my personal observation of its physiological effects I would consider it an excellent adjuvant in the early treatment of cerebro-spinal meningitis. In cases of sunstroke there is more than a probability that many perish from neglect or failure to use the lancet freely when indications are most obvious to all but the prejudiced. The pulse should always be the indicator for its use. When the subject of heat-stroke is insensible, or in convulsions, with contracted pupils, flushed face, strong, bounding, or even full pulse, he presents certainly every indication for venesection, and should be bled for effect, and to effect let blood flow until the black begins to turn to red, even though twenty ounces be required. The lancet does not prevent resort to other appropriate measures, such as sponging body, cold to head, hot to feet, etc.; finally, when danger is overcome, by remedies. Stimulants have not been noticed because indications should govern their use. The secretions must not be overlooked, because this is a vital point in restoration.

On the other hand, a cool surface, very

feeble or intermittent pulse, pallor, preclude use of lancet, but not gelsemium. In all cases early and prompt treatment is imperative.

W. D. HUTCHINGS, M.D.

MADISON, IND.

WAS IT ANTIFEBRIN?

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—Early Sunday morning, August 14, was called to see a lady suffering with tonsillitis. She was feverish and restless, having slept but little the night previous. Ordered antifebrin in 5-grain doses every four hours. Saw her again in the evening, presenting a cyanosed appearance, lips and fingernails being a dark blue, and numerous bluish spots about the face and neck; pulse 112 and feeble. She had taken three doses,—in all fifteen grains. I discontinued the antifebrin and gave whiskey and digitalis, and the symptoms all disappeared in a few hours.

H. J. WINNETT.

LINCOLN, NEB., August 29, 1887.

"A NEW REMEDY FOR NIGHT-SWEATS."

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—In the August number of the GAZETTE appears a communication from Dr. Sampson Pope concerning "a new remedy for night-sweats." If you will allow me a few words on the subject I will endeavor to show the readers of the GAZETTE and also Dr. Pope that the new remedy will turn out an old acquaintance, only in a new garb. Dr. Pope, after a good deal of circumstantial talk with no particular bearing on the subject, tells us that he got it from an old negro, but he is kind enough to inform us that King recommends it. (Curious! how can it then be new?) The remedy in question I find to be *Potentilla* (tormentilla) *sarmentosa* (canadensis). It is the American analogue to the European *Potentilla tormentilla* (*Tormentilla officinalis*), or tormentil, a drug very rich in two peculiar tannic acids,—the tormentil and kinotannic acids. Now, I am sure Dr. Pope knows full well that tannic acids of all descriptions have been highly recommended for "sudamina," no matter what is the cause. The active principle of tormentil being its peculiar acids (tannic), it is clear that tannic acid is the principle from which Dr. Pope gets his *wonderful* effects in the *new* (old) remedy. If our new "Sampson" had studied his

therapeutics not from irregulars and quacks and negroes, but from regulars only, in their standard works he would have found on reflection that a few grains of tannic or, still better, gallic acid would have accomplished the same wonderful effect and with more precision than the new godsend, the cinquefoil, can or will do. The *Potentilla* (tormentilla) *sarmentosa* is so similar to the European septfoil, or *Tormentilla officinalis* (*Potentilla tormentilla*), that there can be no reasonable doubts about their analogous therapeutic action. The latter remedy has since time immemorial been in use among the peasantry of Northern Europe for all diseases where an astringent remedy was indicated, and I am positive Dr. Pope will agree with me that sudamina from any cause is one of the conditions in which astringents would be indicated. But among the medical fraternity this old, now obsolete, remedy has had to share the fate of so many other time-honored drugs, namely, oblivion. Although it still keeps its place among recognized drugs in many Pharmacopœias, it is now rarely used by the profession. It has left place for more certain and upon more active and effective based drugs than it; for example, atropine, tannic acid, gallic acid, ergot, agaricine, picrotoxine, etc. Its usefulness was at an end, its doom was sealed, and so I think the new remedy of Dr. Pope will be. There is no need in our armamentarium for rubbish of an obsolete character.

Respectfully,

OSCAR ALF. FLIESBURG, Ph.G., M.D.
HUDSON, WIS., September 4, 1887.

Notes and Queries.

OXYGEN AS AN ANTIPYRETIC.

At the last session of the Royal Academy of Medicine of Madrid, the President introduced an innovation by allowing SEÑOR DON DR. FRANCISCO VALENZUELA, a non-member, to read a paper. The subject was, "The Effect of Oxygen of High Tension upon the Animal Organism," and the amount of original investigation reported in it may well serve to justify the President of the Academy in departing from the time-honored custom of confining the papers and speeches to academicians. Don Valenzuela began his researches by submitting rabbits to pure oxygen at various pressures. No effect on the temperature was produced at a lower pressure than seven hundred and

sixty millimetres, or five times the ordinary tension of the oxygen in the atmosphere. Under this, however, a rabbit whose initial temperature was 38.7° C. after an hour's sojourn in the chamber presented a temperature of 37.9° C. At still higher pressures of pure oxygen greater falls of temperature occurred. The highest tension at which experiments were made was fifteen hundred and twenty millimetres; this reduced a rabbit's temperature in an hour from 38.4° to 32.2°. The general effect on the animals of oxygen at the higher tensions was to produce a temporary torpor, and they came out of the chamber covered with moisture; in a very short time, however, they entirely recovered their ordinary condition. Some experiments were also made on the effect of oxygen of high tension on the febrile state, by inducing septicæmia in rabbits and comparing the course of the disease in those which were subjected to the action of oxygen with that in others kept under ordinary atmospheric conditions, with the general result that pyrexia appeared to be reduced by the sojourn in the oxygen chamber. In one case two rabbits were each inoculated with a cubic centimetre of serous fluid with a putrid smell from a dead body. One of them was then subjected for two hours to the action of oxygen of a tension seven times higher than that which it has in the air. Four hours subsequently the temperature showed a reduction of 1.7° C., the temperature of the other rabbit at the same time being 3° C. higher than the normal. The next day the body heat of the first rabbit was 1.5° C. and the second 3.1° C. above the normal. The first was replaced in the oxygen chamber under the same pressure, and for the same length of time as before, which reduced the temperature 2.2°,—that is to say, to 0.7° below the normal. On the third day it was only 1° C. above the normal, while the second rabbit died. No further treatment was resorted to, and on the fourth day the first rabbit had regained its normal physiological condition. It was found in the various experiments made that when a small quantity of septic matter only was introduced, a single session in the oxygen chamber was sufficient to destroy the effect of the virus, but that if a high degree of sepsis was induced the poison was only partially destroyed by a single session. Dr. Valenzuela then made some observations on patients. A young man was attacked by pneumonia, affecting both lungs, on April 26. On the morning of the 27th the temperature was 39.5° C., and in the evening

40.4°. He was then put into the pneumatic chamber containing pure oxygen at a pressure of nine hundred and fifty millimetres, or six times the ordinary tension of atmospheric oxygen, for an hour, after which his temperature was 1.7° C. lower. The next morning it was 39.2°. A second session in the chamber produced no immediate reduction, but four hours later the temperature was 39°. That evening it was 39.5°, and it gradually returned to normal, though no further sessions in the oxygen chamber were ordered. The man made a rapid recovery. Dr. Valenzuela likewise mentioned some other cases of pneumonia and tuberculosis on which the oxygen treatment appeared to have a beneficial action.—*The Lancet*, June 4, 1887.

BUTTER AND OLEOMARGARINE.

The following is quoted from Professor Atwater's article on "The Digestibility of Food," in the September *Century*: "Much has been said and written about the relative digestibility of butter and oleomargarine. The only actual comparative tests on record are a series made with a man and a boy by Professor Mayer, in Holland. In these from 97.7 to 98.4 per cent. of the fat of the butter and from 96.1 to 96.3 per cent. of the fat of the oleomargarine were digested. The average difference was 1.6 per cent. in favor of the butter. Certain possible sources of error in such experiments make it a question whether the digestion was not in fact more nearly complete than even these figures make it. An interesting series of experiments in artificial digestion, conducted by Dr. R. D. Clark, in behalf of the New York Dairy Commission, though of course not affording a definite measure of the process as it actually goes on in the body, accords with the very natural supposition that, in ease, and perhaps in completeness of digestion, oleomargarine would rank between butter and the fat of ordinary meat.

"In chemical composition oleomargarine stands between meat-fat and butter. It will be remembered that oleomargarine is made from beef-fat and lard by removing from them part of the stearin, which counts as the least digestible ingredient, and adding a little butter and sometimes oil, as cotton-seed oil. The bulk of all these fatty substances, meat-fat, butter, and oil, consists of the same or nearly the same kinds of fat, the meat-fat having the

more stearin. The butter, however, contains small quantities, seven per cent. or thereabouts, of peculiar fats, butyrim, caproin, etc., which give it its flavor and which are thought by some to make it more easily digestible, especially by persons whose digestion is enfeebled by lack of digestive juices or otherwise.

"In the excitement over oleomargarine legislation the discussion of the relative digestibility of butter and butter substitutes has been made very active by the importance of its bearing upon their comparative values for nutriment, and many statements have been made as to the effect of the chemical composition of the peculiar butter-fats and the consequent chemical changes in the process of digestion and assimilation in the body. It is interesting to compare the very positive inferences which some writers upon the subject draw from experimental investigations, with the very guarded expressions of opinion made by the authors of the same investigations in their writings and in personal conversation. The facts at hand and the general impression of special students of these subjects, so far as I have observed, are to the effect that probably, for healthy persons, the difference between butter and oleomargarine in ease and in completeness of digestion would be at most very slight, but that for people with enfeebled digestion and for infants, butter may, perhaps, at times, have the advantage."

NEW TEST FOR MILK.

A new test for water—that is, pump-water—in milk has recently been proposed by HERR SZILASI. This depends on the fact that sulphate of diphenylamine is colored blue by the action of an exceedingly dilute solution of a nitrate. As well-water always contains more or less nitrate, its presence in milk can be detected. The test is carried out thus: Twenty minims of sulphate of diphenylamine is placed in a small porcelain vessel, and a few drops of the milk which is to be examined added to it. If this contains even five per cent. of average well-water, a blue tinge will gradually distinctly appear. Sulphate of diphenylamine is easily procurable, and only costs about sixpence an ounce, so the test may be readily tried.—*The Lancet*, June 11, 1887.

— T H E — Therapeutic Gazette.

Whole Series,
Vol. XI.

Detroit, October 15, 1887.

Third Series,
Vol. III. No. 10.

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Original Communications.

ANTITHERMIC MEDICAMENTS CONSIDERED AS SEDATIVES OF THE NERVOUS SYSTEM.*

BY PROFESSOR DUJARDIN-BEAUMETZ, Paris, France.

GENTLEMEN:—I think that we may fitly characterize the age in which we live as one in which great advances in the healing art have been made. Every day brings to light some new discovery in therapeutics, and while the value of human life goes on increasing, we

* A lecture delivered in Cochon Hospital, and designed as an appendix to "New Medications." From advance sheets.

are continually put in possession of new and precious means of mitigating the infirmities and lessening the physical discomforts of human existence.

In previous lectures delivered during the scholastic year 1884-85, I studied with you the antithermic treatment and the new agents just coming into use for the reduction of fever temperature. To-day I am going to speak to you of another still newer antifebrile remedy, but shall not repeat the general considerations concerning the antithermic medication presented in my former course,† and I have nothing to alter of what I then said. I wish only to call your attention to a property of

† See THERAPEUTIC GAZETTE, vol. for 1885, p. 577.

these antithermic medicaments which has but recently been brought to light, and which is destined, perhaps, to render more service to therapeutics than that even of lowering the bodily temperature.

When I studied the physiological properties of the new antithermics, I brought before you an interesting fact that a certain number of these medicines act, not by lowering the febrile combustions, as was at first believed, but by a direct and special influence upon the thermic centres of the spinal cord. It is this special action which has suggested the idea of utilizing these antipyretics in affections of the nervous system which are independent of fever, and clinical experimenters have been gratified by the results which have been obtained along this line of investigation.

Salicylic acid has taken its place among the analgesics, and has been employed with success in neuralgias and even in *tabes dorsalis*. The same may be said of antipyrin, and it may be affirmed that this substance is almost the peer of salicylic acid in the treatment of acute rheumatism, and without possessing the disadvantages of the latter. But it is particularly to antifebrin or acetanilide that I desire to call your attention, and it is with the consideration of this new therapeutic agent that I shall begin what I have to say to-day.

Acetanilide is a substance which has been long known, but has hitherto possessed only a chemical interest, not having entered the domain of medicine. Its discovery was due to Gerhardt in 1835, who obtained it by the reaction of chloride of acetyl on phenylamine. It was only last year that the attention of physicians was attracted to this product of the laboratory, and it is to Cahn and Hepp, assistants at the clinic of Kussmaul, of Strasbourg, that the merit belongs of having for the first time studied the antithermic action of acetanilide, to which they gave the name of antifebrin. For my part I am disposed to repudiate the name of antifebrin as being ill chosen, and as indicating, as we shall see, only the least important property of this product, and I shall use in preference the name of acetanilide, which was given to it by Gerhardt, and which has the advantage of expressing its chemical composition.

A short time after the first clinical trials were made, Prof. Lépine, of Lyons, studied in detail the physiological and clinical properties of this medicament. After having ascertained by experiments on animals the action of this substance on the temperature, on the circulation, on the elements of the

blood, and on the nervous system, Lépine employed acetanilide in apyretic diseases, and it is to him that the honor belongs of having found that this new medicine is not only powerfully antithermic, but also a most useful nerve.

I have myself, in my hospital service, made interesting experiments, which you have many of you witnessed. The results of my clinical observations and of researches made in my laboratory have been recorded in the inaugural theses of two of my pupils, Weill and Arturo-Reyes y Sardiña, and these are the results which I am going to present to you to-day.*

Acetanilide, as it is found in commerce to-day, is a substance of a beautiful pearly-white color, very crystallizable. When carefully purified, it has no odor, and possesses a slightly pungent taste, which is not disagreeable; hence patients take it readily. It is very slightly soluble in water, and this would be a great drawback to giving it in solution were it not for the fact that it dissolves in alcohol with great readiness.

The mode of preparation of acetanilide is very simple. All you have to do is to act upon aniline with glacial acetic acid, and before this medicament became an industrial product we used to make it constantly in our laboratory. I need not take up your time with the details of the process, which you will find described at length in the theses of Weill and Reyes.

The chemical study of acetanilide was made in a very thorough manner in Germany by Menshutkine,† in 1882, and this chemist has shown that in order to obtain acetanilide in a state of purity it is necessary always to employ an excess of acetic acid. This fact has had an important practical consequence, leading to an increase of the supply and a fall in the price, which has now gone down to ten francs per kilogramme, and I need not tell you that the cost of a drug is an element which is always to be taken into account when its administration is to be long-continued.

From a chemical point of view, the constitution of acetaniline may be interpreted in the following way. This substance has for its formula C_6H_5NO . It may be considered

* *Vide* Weill, "On Acetanilide" (Thèse de Paris, 1887); Arturo-Reyes y Sardiña, "Contribution to the Physiological and Therapeutical Effects of Acetanilide on the Nervous System," 1887.

† Menshutkine, *Journ. de Pharmacie*, May 15, 1887, p. 520.

as composed of aniline in which one atom of hydrogen has been replaced by the radical acetyl :



Now, aniline itself may be regarded as ammonia in which one atom of hydrogen is replaced by the radical phenyl, C_6H_5 , and from this point of view acetanilide may be considered as an ammoniacal compound, in which two atoms of hydrogen have been replaced, the one by the radical phenyl, the other by the radical acetyl :



In other words, we might apply to it the name of *phenyl-acetamide*.

When employed as a medicine, acetanilide, I need not tell you, ought to be perfectly pure. All impurities which the aniline of commerce may contain ought especially to be eliminated. The following are the characters which, according to Yvon, should belong to medicinal acetanilide :

1. It should possess no odor.
2. It should be perfectly white.
3. Heated on a platinum foil, it should give a colorless liquid.
4. When thus heated, it should be entirely volatilized, leaving no residue.
5. It ought not to give with hypobromite of sodium an orange-yellow precipitate.

This last reaction, which is very delicate, is obtained whenever acetanilide retains any traces of free aniline.

Acetanilide is always of easy administration. It may be given in capsules or in solution. Water being, as I have told you, an improper vehicle, it may be given in wine, to which it does not communicate any disagreeable taste. One may employ to advantage the following formula :

R Acetanilide, 5 parts;

Simple elixir (or elixir of Garus), 170 parts. M.

A tablespoonful contains 50 c.g. ($7\frac{1}{2}$ grs.) of the medicament.

The doses may vary from 25 centigrammes to 3 grammes in the twenty-four hours, but whatever may be the daily quantity prescribed, it must not be given in one full dose, but in several small doses of 50 centigrammes or more, administered at regular intervals during the day. By giving the entire amount

in one dose you would run the risk of witnessing collapse and cyanosis.

Let us first study the physiological action of acetanilide. In weak doses (*i.e.*, 2 to 4 centigrammes per kilogramme of the animal's weight) acetanilide has little perceptible action on man or animal in the physiological state. When administered in subcutaneous injection to hares and guinea-pigs, or introduced by means of the oesophageal sound, it produces no disturbance, no depression of the temperature.

Weill himself took four grammes of acetanilide in wine, and the result of the experiment was negative. The temperature, taken every quarter of an hour, remained stationary, and the tracings of the pulse after and before the dose indicated no modification.

In larger doses (25 to 50 centigrammes per kilogramme of the animal) acetanilide is toxic, and the animal is completely overcome. There is marked stupor and prostration; movements become difficult and hesitating; the temperature falls steadily. The respiration is first slowed, then it loses its regular rhythm, stopping at certain moments, and immediately after becoming tumultuous and precipitate. At this period collapse generally sets in. The animal loses all feeling; if you pinch, prick, or burn any part the reaction is feeble and incomplete; to the analgesia succeed anæsthesia and death. Generally death does not supervene rapidly, the absorption of acetanilide being ordinarily delayed from twenty-four to thirty-six hours.

This fact is to be borne in mind, for it seems to show that acetanilide is not by itself a true poison, but that it acts probably as a toxic by robbing the blood little by little of certain principles indispensable to calorification, causing thus a progressive refrigeration which is incompatible with life. This fact seems proved by the researches of Lépine and Weill, which have shown that if you will leave animals poisoned by acetanilide in a warm place you will enable them to recover from the effects of the toxic agent.

The changes in the blood are very important to note. In our experiments on animals, we have remarked a considerable diminution in the quantity of the oxyhæmoglobin. Thus in hares we once saw the hæmoglobin fall from 12.5 per 1000, the normal figure, to 5.5 per 1000, when death ensued. The spectroscopic examination of the blood reveals important changes in the optical composition. According to Lépine and Aubert, there is seen in the spectrum of the blood of animals

poisoned by acetanilide a characteristic ray between C and D, indicating the presence of methæmoglobin. To sum up, the principal alterations of the blood are the marked diminution of the oxyhæmoglobin at the same time that methæmoglobin appears. Quite recently Henocque has studied anew this action of acetanilide on hæmoglobin, and has shown that this agent diminishes the quantity of oxyhæmoglobin as well as the activity of the exchanges.

Despite the sensitive reactions which acetanilide presents, it is impossible to discover the least trace of this substance in the urine of patients to whom it has been administered. It is not then eliminated in substance, and in the present state of our knowledge we can only conjecture as to how it is eliminated.

Acetanilide is almost entirely devoid of antiseptic properties. It has been studied from this point of view by Miquel, director of the micrographic service at the meteorological observatory of Montsouris. According to his experiments, one may incorporate considerable quantities of acetanilide with culture-liquids without impeding or retarding the development of atmospheric bacteria there vegetating.

We come now to the therapeutic applications. As an antithermic, acetanilide is a medicament of but moderate energy, which depresses the temperature by acting on the nervous system and on the respiratory power of the blood. Moreover, its antithermic action is unequal; in small doses we have seen it both produce and fail to produce a considerable thermic fall. Moreover, it frequently causes cyanosis. Acetanilide, then, has shown itself to be very much inferior to antipyrin as an antithermic, and it decidedly resembles phenic acid in its physiological action. Therefore, for my part, I opine that acetanilide, like phenic acid, ought to be discarded as an antipyretic. But as a nervine medicament, acetanilide is a precious acquisition to therapeutics, and from this point of view the experiments undertaken by Prof. Charcot in his hospital service are in perfect accordance with my own.

I must assure you first of the complete innocuousness of acetanilide in affections which are not febrile, while in febrile maladies, and particularly in typhoid fever, this same medicine, even when given in small ($\frac{1}{2}$ -gramme) doses, is liable to produce cyanosis, and may depress the temperature three degrees or more, as I saw in one case. Administered in conditions of apyrexia, however, it may be

taken in much larger doses without producing any appreciable physiological effect. Nevertheless, while in certain patients acetanilide in doses of 2 grammes a day continued even for months produces no manifest physiological effect, in others, on the contrary, the same daily quantity, though given in fractional doses of only $\frac{1}{2}$ gramme, causes a well-marked cyanosis; but this cyanosis does not appear to be harmful. It has been impossible thus far to explain this difference of action, which seems to depend on the activity, greater or less, of the gaseous exchanges in the blood.

In patients not febricitant, and who are good subjects for this medicament on account of its agreeing well with them, no cyanosis or other unpleasant symptom resulting, these are the therapeutic results which we have obtained. I have combated by acetanilide three orders of phenomena,—the element of pain in general, then the special pains of locomotor ataxia, and lastly epilepsy.

In reference to its influence on pains in general, acetanilide has shown itself to be inferior to aconitine in the treatment of facial neuralgia; but when the pains in the head are linked to nerve-alterations, as, for instance, in certain cases of neuritis of the nerves of the orbit, acetanilide has been found superior to every other medicament. I may cite in this connection the instance of a patient suffering from most intense cephalic and periorbital pains, which completely disappeared with the administration of a gramme and a half of acetanilide. These pains had resisted for months full doses of aconite, bromide, and iodide of potassium. I have also obtained good results from acetanilide in the treatment of rheumatic, muscular, neuralgic, and even articular pains, and in these cases this medicament seems superior to salicylic acid, not so much by its general effects, as because it never gives rise to the cerebral disturbances which salicylic acid occasions.

Dr. Demiéville, of Lausanne, in a communication read at the meeting of the Vaudois Medical Society, has given an interesting study of acetanilide as a nervine medicament, which completely confirms my own researches.* He has shown that the abatement of pain begins to be felt a very short time after the administration of the medicament, the relief being frequently experienced in the course of a quarter of an hour. Generally, however, the pain does not entirely disappear

* "On Antifebrin as a Nervine" (*Revue Méd. de la Suisse Romande*, June 15, 1887, p. 305).

till an hour or two after the medicine has been taken. Moreover, acetanilide, according to this authority, has very marked somniferous qualities, and, as a consequence of its administration, there is not only the cessation of painful symptoms but also a strong desire for sleep. Demiéville has administered acetanilide chiefly in sciatica, in intercostal and other neuralgias, and has obtained excellent results.

But it is in the lightning pains of locomotor ataxia, so varying in their manifestations, that acetanilide renders us special service. You can see in our wards several patients affected with *tabes dorsalis*, who used to suffer continually from the painful crises so common in this affection, and who have been completely relieved by the employment of this medicament. Dr. Signé, in his inaugural thesis, written under the direction of Prof. Grasset, of Montpellier, has mentioned cases similar to my own.

In a certain number of patients the effect of this medicament is lasting,—that is to say, the pains disappear as long as the use of the medicine is continued, to return when the effects of the latter have passed off; but it must be borne in mind that in most cases the amelioration is but transient. After having for a fortnight or so obtained marked benefit, the acetanilide fails any longer to relieve them. This is what has happened to one of our patients, who is suffering from dorsal *tabes* with hyperæsthesia of the cord, which dooms him to a most painful form of spinal epilepsy. For fifteen days these painful symptoms, which had resisted all previous treatment, yielded to acetanilide, but since then, despite an increase of the dose from one and a half to three grammes a day, no further benefit could be obtained.

Making all due allowance for disappointments and failures, this new remedy has proved of great utility in this disease, and we have another valuable means of combating the pain which is so prominent and persistent a symptom. Of course we have no pretension to cure dorsal *tabes*, but what we can affirm is that the *douleurs fulgurantes* are often amenable to acetanilide. Fischer has also noted this sedative action on the nervous system in ten ataxic patients to whom he administered acetanilide. Only one failed to derive relief, while all the others were signally benefited.

I consider this fact as of great moment, for heretofore, apart from hypodermics of morphine, the disadvantages of which you know, and which so soon lose their effect, therapeutic

art has been but meagrely provided with anodyne medicaments.

It remains for me to speak of epilepsy in this connection. To enrich therapeutics with a medicine capable of curing this frightful malady would be to render a precious service to humanity, and it must be confessed that, apart from bromide of potassium, which, despite its drawbacks and shortcomings, still remains the best means that we have of treating this disease, our therapeutic arsenal is very poor in really active remedies. I have administered acetanilide for epileptic fits, but the small number of successful cases which I have observed does not warrant me in drawing formal conclusions. In one case, however, I obtained results which were really demonstrative. The case was that of a child, 12 years of age, of respectable intelligence, who for a year had been subject to epileptic fits which were very characteristic, and had been observed by Drs. Gilles and Stackler. We agreed, on consultation, to put this child on the bromide treatment, but having been obliged steadily to increase the doses up to eight and ten grammes a day, we soon had symptoms of bromism, which obliged us to suspend the treatment. I then ordered acetanilide in the dose of $\frac{1}{2}$ gramme three times a day. This treatment has now been continued for three months, and there has been no repetition of the fits. Never before since the onset of the disease has there been so long an exemption from the convulsive crises.

Lépine has also observed cases of epilepsy where acetanilide has had a favorable influence. But I must confess that since I have made a general use of this medicament in the treatment of epilepsy, I have had more failures than successes. The cases observed in the service of Prof. Jolly, of Strasbourg, and reported by Salm, and those noted by Faure in the service of Dr. Denis at the Infirmary of Bicêtre, have shown that in the greater number of cases of epilepsy, acetanilide has been found to be without efficacy. It is, then, a medicine on which we cannot reckon as an anti-epileptic.

I must now speak to you about the analgesic action of antipyrin. In previous lectures I have dwelt on the influence of this medicament on the temperature of febricitants. I shall not return to this subject, having nothing new to add, antipyrin remaining still one of our best antithermics, but I wish to call your attention to a new and very important property of this medicament.

From the date of the first applications of

antipyrin to therapeutics, it has been employed in the treatment of rheumatism, and since early in 1884 Alexander has noticed its good effects in calming the articular pains. These observations have been confirmed by Demme, Demuth, Masius, Bernheim, Lenhartz, Neumann, Clement, Blanchard, Moncorvo, Fraenkel, etc. Then, in consequence of its proved analgesic action in this disease, it was employed in other painful affections, and two years ago it was recommended by Khomiakoff and Livoff in migraine, while last year White and Sprimont, in their turn, found it to be of utility in hemicrania. But we are indebted to Prof. Sée, in recent communications to the Academy of Sciences, for the most striking demonstration of the analgesic properties of antipyrin.*

Prof. Sée was desirous of ascertaining by experiments on animals how antipyrin could bring about the cessation of pain. In operating on dogs he noted the following phenomena :

1. A very notable diminution in the general sensibility, and a real analgesia in the member which received the injection of the remedy, sometimes also in the opposite limb.

2. The electrical excitation of the sciatic nerve in the animal under antipyrin produces only a very feeble reflex contraction, indicating the enfeeblement of the sensory perceptivity and reflex activity of the spinal cord.

Chouppe, moreover, has arrived at similar conclusions by a different path. By a series of experiments, which he has communicated to the Society of Biology, he has shown that if in dogs you inject what would ordinarily be fatal doses of hydrochlorate of strychnine, after having introduced into their system a certain quantity of antipyrin, not only does the animal survive, but you do not even always provoke strychninism. It seems, then, demonstrated by this that antipyrin appreciably modifies the reflex power of the spinal cord.

* Alexander, *Centralb. f. Klin. Med.*, No. 33, 1884; Demme, *Fortschritt der Med.*, No. 24, 1884; Demuth, *Aetisches Intelligentblatt*, December, 1884; Masius, *Bull. de l'Acad. de Méd. Belgique*, t. ix., No. 1, 1885; Bernheim, *Revue Médicale de l'Est*, April 15, 1885; Lenhartz, *Charité Annales*, Bd. x., 1885; Neumann, *Berlin. Klin. Woch.*, No. 37, September 14, 1885; Blanchard, *Revue Méd. de la Suisse Romande*, May, 1886; Clement, *Lyon Méd.*, August 29, 1886; Moncorvo, Paris, 1886; Fraenkel, *Soc. de Méd. Interne de Berlin*, October 18, 1886; Livoff, *Vratch*, No. 5, 1885; White, *N. Y. Med. Record*, September 11, 1886; Sprimont, *Med. Obozen*, No. 23, 1886; G. Sée, "On Antipyrin as an Analgesic," *Acad. des Sc.*, April 18, 1887.

In acute rheumatism, antipyrin may take its place by the side of salicylate of sodium. Sometimes, even, it is found to be superior to the latter, and under its influence we have seen attacks of rheumatism subside which had resisted the salicylate combined with local revulsion. Ordinarily, the fluxion and pain in the joint have yielded at the end of several days, and have not returned. It is certain that the action of antipyrin in acute rheumatism of the joints is neither more intense nor more rapid than that of sodium salicylate. It, however, has the advantage over the latter of not giving rise to the cerebral troubles sometimes caused by the sodium salt. The dose of antipyrin in rheumatism varies from 4 to 6 grammes (3i to ʒiiss) in the twenty-four hours, and in these doses (1 gramme every four to six hours) we witness cessation of the pain, without the supervention of any cardiac or renal troubles.

Drs. Bernheim, of the faculty of Nancy, and Simon, alumnus of the same faculty, have published an important work on the employment of antipyrin in the divers forms of articular rheumatism. Their numerous and interesting observations accord with the facts which I have myself observed in my hospital service, and they have obtained excellent results from antipyrin without any unfavorable accompaniment, unless it be a slight nausea in some patients.

But it is especially in the nervous troubles of the sensibility that antipyrin does good. All the neuralgias are tributary to its action, and you will obtain the best effects in sciatic and facial neuralgias. Under the influence of a small dose of 2 grammes one will often see these atrocious pains rapidly disappear.

Migraine may also be cured by antipyrin, which has proved to be certainly the best remedy which we possess for this painful disease. Administered at the onset of the paroxysm, it has considerably diminished the intensity of the latter, and if it is given as soon as the first premonitory symptoms make their appearance, it is pretty sure to abort the attack. In any event, it always brings marked relief, and the number of failures is relatively small. The medium dose of antipyrin to administer in migraine varies from 1 gramme to 1½ grammes. Antipyrin will also allay the lightning pains of tabes dorsalis; and here it may be affirmed that it is superior to acetanilide, for it is more certain than the latter, and has none of its drawbacks. It does not produce cyanosis, and its effects on the system are not so soon worn out.

There is, lastly, according to Professor Sée, a group of painful affections which are equally amenable to antipyrin. I refer to the pains of angina pectoris accompanying certain diseases of the heart, especially those of the aorta and coronary arteries. These thoracic and cardiac pains may disappear like magic after the administration of a few gramme doses of antipyrin.

The solubility of antipyrin renders its administration easy, and you can give it in capsules or in solution. If you choose the latter form, you should remember that antipyrin has a disagreeable taste. Therefore, in order to disguise this taste, you can flavor your solution with some of the aromatic essences, or give it with simple elixir or rum. Germain Sée advises to administer the dose of antipyrin in a tablespoonful of water, then to wash down the dose with a few mouthfuls of kirsch or toddy. You may then direct your patient to take 1 gramme of antipyrin, and repeat this dose from two to six times a day, giving in this way from one-half an English drachm to a drachm and a half in the twenty-four hours. These doses have no unpleasant effect, unless it be at times to produce a scarlatiniform eruption, which soon passes away. It is necessary to continue the administration of the medicine for a full week, especially if you have to do with rheumatic manifestations.

The remarkable solubility of antipyrin has led to another mode of its introduction. I refer to the subcutaneous method. In his communication* made to the institute the 11th of July last, Germain Sée has shown that we may in a great many cases substitute antipyrin for morphine. Since the introduction of antipyrin into therapeutics numerous physicians had employed antipyrin in subcutaneous injections, and in my own hospital service I had made numerous trials of the same kind, but they all had for their end the production of an antithermic effect. Dr. Lébert, however, has been in the habit for more than a year of employing these injections for various neuralgias.†

The observations of Germain Sée are most conclusive, and you will find the principal of them recorded in the thesis of his pupil, Dr. Caravias.‡ These subcutaneous injections are made with strong solutions, consisting of one-half gramme of antipyrin in precisely the

same weight of water for one injection, and these injections may be repeated from two to four times in the twenty-four hours. The subcutaneous injections are well borne. At the same time, so concentrated a solution may at times be somewhat painful. To avoid, therefore, any local irritant action, you can make your solution more dilute and employ the following formula :

R Antipyrin, grammes v ;
Water, grammes x ;

and inject, as before, a syringe-ful of this solution. If you use this formula, you will have to multiply your injections in order to obtain the effect desired.

In the subcutaneous use of antipyrin as a remedy for pain a real progress has been effected, and we cannot too much felicitate ourselves on the advantages accruing from this discovery, not the least of which is that we can now substitute for hypodermics of morphine, so fraught with peril in many cases because leading to morphiomania, medicaments quite as active, which are unattended with danger.

It remains to say a few words about salol, on which I am now experimenting in my hospital. Salol is, as you know, a white substance, possessing an odor which reminds you somewhat of bitter almonds. It is chemically produced by the combination of salicylic acid with phenic acid. It is also a member of the aromatic series which has already furnished us so many medicaments. Salol was introduced into therapeutics by Dr. Sahli, who made it the subject of a communication to the Society of Medicine of Basle, and shortly afterwards it was studied by Prof. Lépine, whose researches inspired the thesis of Montange, which was approved at Lyons in January, 1887. The difficulty in the administration of salol consists in its insolubility, which renders almost impossible the preparation of a homogeneous mixture. It is well, therefore, always to give salol in emulsion, which may be made with the tincture of quillaya saponaria, or with mucilage and syrup.

What should be the doses of salol? The experiments made in my laboratory by Dubief show that this substance has no toxic properties, and that one may administer to hares considerable quantities, amounting to 2.50 grammes per kilogramme of the animal's weight, without producing any other symptom than a momentary fall of the temperature, a result which shows that salol possesses, like all its congeners, antithermic properties. You

* Germain Sée, *Acad. des Sciences*, July 11, 1887.

† Lébert, "Subcutaneous Injections of Antipyrin for Pain," *Concours Méd.*, July 30, 1887.

‡ Caravias, Thèse de Paris, 1887.

will then prescribe salol in gramme doses every three to six hours, so that from four to eight grammes may be taken during the twenty-four hours, and you will give the medicine in capsules, which is practically the best mode of administration.

Salol is also a nervine medicament. It allays nervous irritability in acute articular rheumatism, but our experiments seem to prove that it is less efficacious than salicylate of sodium, while it is chiefly in the lightning pains of *tabes dorsalis* that this medicament has rendered us real service. In relieving these patients it enables them to sleep, and to forget for some hours their sufferings. I will add that, like acetanilide, salol is not an antiseptic, and that, according to the researches of Miquel, it does not prevent bacteria from developing in culture-broths to which large doses are added.

As you see, it is still to this series of aromatic bodies that we owe these new medicaments, and there is reason to think that the properties which we have studied belong to this entire group of substances, and that the future has in reserve for us yet more valuable discoveries.

*A FEW PRACTICAL NOTES ON THE USE OF SALICYLATE OF AMMONIUM, APOMORPHINE, SODIO-SALICYLATE OF CAFFEINE, IODOL, AND RESORCIN.**

BY OSCAR A. FLIESBURG, M.D., HUDSON, WIS.

AMMONIUM salicylate has for the last three or four years received some attention from the therapist, and deservedly so. My object in this paper is to bring out a few practical hints on its use. I will not speak about the theories, etc., why this salt ought and should be used in preference to any other ammonium salt or salicylic acid salt in the treatment of fevers. I will only cite the remarks made by Dr. J. R. Burnett, of Neenah, Wis., in a paper read before the Wisconsin State Medical Society at their meeting in 1886, and afterwards appearing in the *Journal of the American Medical Association*, page 654 and following. He says, "But I also ventured upon a radical departure from the outset. I also reasoned that the rational remedy must be ammon. salicyl., for reasons which need be only alluded to. Its germicidal properties, possessed in common by all salicylates, and its

antipyretic and antiseptic powers, would at least give promise of effectiveness in modifying if not aborting the course of fevers. It would certainly avail in hyperpyrexia; it ought to fortify against systemic contaminations from intestinal ulcerations; and whether or not it were to be decomposed in the body, and thus produce a nascent carbonate, it should, in common with all ammonium compounds, serve as a stimulant, which could be strengthened at will by addition of ammonia in excess." I coincide with Dr. Burnett entirely in the first part of this citation, but I take reservation to the latter part of the sentence, inasmuch as Dr. Albert Robin has shown that the salicylates, benzoates, cinnamates, etc., are carried away by the urine in the form of salicylurates and hippurates, those compounds forming by, or rather reducing with, those acids—viz., salicylic, benzoic, cinnamic—combining with some nitrogenous compound, such as glyocol, and giving up in the act of combining a part of its oxygen. But be this as it may, the fact stands undisputed and proven that we, in salicylate of ammonium, possess a sure remedy to reduce temperature, and by its germicidal and antiseptic properties able to abort and shorten the zymotic diseases. I have for some years past been in the habit of prescribing salicylic acid in the treatment of pneumonia (lobar or croupous, lobular or bronchial), in simple and capillary bronchitis, and also to a certain extent in typhoid, but still more in fevers of the puerperium, and never have I had reason to regret this step from the trodden path. In later years I have always prescribed ammonium salicylate as the best form to give it in those fevers, leaving the sodium salicylate to fevers of a rheumatic type. In a paper read before this Society at their last meeting in Eau Claire, I spoke about this salt and apomorphine in the treatment of pneumonia and bronchitis in children in the following words: "I now bring forward the salicylate of ammonium and apomorphine for their intrinsic value not only as expectorants and reducers of temperature, but also for their constitutional and antiseptic properties, and still more as solvents for fibrin and serous fibrin. If M. Robin's theory on fevers is correct, then we cannot in the whole range of antipyretics find a more efficient heat-reducer than ammonium salicylate." I am now more than ever convinced of the truth of this statement. The formula which I have employed has been one part acid to two parts carbonate of ammonium. This leaves a free excess of carbonate of ammonium, but I have not con-

* Read before the Interstate Medical Association at their meeting in Hudson, July 12, 1887.

sidered this a drawback. I always have it prepared in the nascent or fresh state. The dose I have employed has ranged from 5 centigrammes ($\frac{3}{4}$ gr.) to an infant to 1 gramme (15 grs.) or more to an adult, to be repeated as need be every hour or two. I have with those doses been able to reduce temperature in a short time from 105° or 106° to 99° or 100° , and by repeated doses at longer intervals been able to keep the temperature down at that point. At the same time my cases have progressed without much other medication to a favorable end in a shorter time, and with less distress to the patient than by older methods. I have very little inclination to cite cases. I will only say that for the last year I have used it in every case of pneumonia, bronchitis, and croup I have met in children, and in nearly all cases in adults, and always with the same result,—a short uninterrupted course of the disease to the better. From such results I cannot speak too highly of the drug, or use too laudatory words for its use. My time is rather limited to prepare an elaborate paper on the subject, and therefore I hope this will be sufficient to induce some of you gentlemen present to use this preparation in your practice, and that you then will unquestionably be as pleased with its exhibition as I have been.

Apomorphine.—We all know and the most of us have used this therapeutical agent for its emetic effect, but my purpose to-day is not to speak about it as a stomach-revolutionizer or an emesis-producer, but it is to call your attention to this drug in the capacity of an expectorant. For the last three years I have used apomorphine in every case of capillary bronchitis and membranous croup I have met. I must, without exaggerating, have used it upwards of one hundred and fifty times. Whenever I have had the misfortune to meet a case of capillary bronchitis, my habit has been to prescribe alternately a salicylate of ammonium mixture and powders containing apomorphine, the dose varying according to age from 1 milligramme to 2 milligrammes every one, two, or three hours, as urgency of the case demanded. I have always found it to act very promptly, producing an easy expectoration of the thick, tenacious phlegm, which otherwise so often strangles and chokes the unfortunate little sufferer in his futile endeavors to rid himself of this sticky stuff. It produces a watery exudate in the bronchi and bronchioles, which again thins the tenacious phlegm, and in this way makes it easy for the patient to raise this otherwise murdering substance. It also by this transudation bathes

the inflamed surfaces with a non-irritating fluid. It carries away the surplus blood from the arterioles by compressing the lumen of the same, and by this action gives the inflamed surfaces a chance to recover from their hyperæmic state. I do not know of any one having earnestly recommended apomorphine as an expectorant with sufficient data to claim its use as such, Rossbach, who has lately recommended it in combination with morphine, perhaps excepted: he recommends it in chronic bronchitis in adults. Bartholow speaks of it only, "that it has been used, but with too few data to insure its safety." Stillé and Maisch say "it may be used in chronic laryngeal troubles." Wood, to be sure, in his "Therapeutics," says "that Dr. Jurasz commends it as an expectorant, and that he is confirmed by several observers, among them Dr. Werthner,"—who, indeed, seems to be the only one who has used it in this capacity and observed the same effects which I claim for it,—namely, in the early stage, in a few days at the highest, it changes the thick, viscid mucus into a thin, easily-raised fluid; to quiet the excessive cough; and to act as a heart-sedative. But I must sound a tocsin, a warning-bell to toll emphatically against the excessive doses recommended by Wood and said to be employed by Werthner. Wood gives the dose as $\frac{1}{8}$ to $\frac{1}{4}$ of a grain (0.07—0.15 grain) every two hours, and the double amount to an adult. Now, these are, indeed, very dangerous doses; and cannot but bring the remedy into disrepute on account of the necessarily following depressant symptoms bordering on collapse. We know the emetic effect is produced by $\frac{1}{4}$ to $\frac{1}{2}$ gr., and here Dr. Werthner recommends the nearly identical dose as an expectorant. The largest dose I ever administered as an expectorant has been $\frac{1}{10}$ gr. (3 milligrammes) to a child 4 years old; it was exhibited every two hours. I thought afterwards that I never would give it in so large a dose, as the depressant effect was too great. Still, I am sure I have seen just the effects Dr. Werthner claims for it. For this reason I cannot enough warn you to not use excessive doses of this drug,—which I value so highly, and which is capable of doing so much for our little sufferers in time of need,—and thereby become prejudiced against it, all on account of a rash and indiscriminate use of the same. The diseases in which I have found it most valuable are acute suffocative catarrh and true croup. I again refer you to my paper read at the last meeting in Eau Claire, where

I have more fully detailed the use of this most valuable drug.

Sodio-Salicylate Caffeine.—Last year or the year before my attention was called to this salt in some German journal. I afterwards saw it mentioned in the *American Druggist*. It struck me at once that this combination should be particularly useful in certain cases of heart-disease,—for instance, in endocarditis of a rheumatic type, or in pericarditis with effusion, or in acute endocarditis. I therefore had a druggist, Mr. Johnson, of this place, prepare a sample for me. I have now employed it in a few instances.

CASE I.—Mary K., domestic, æt. 16, endocarditis rheumatica, chlorotic, strumous; had been giving salicylic acid for polyarthritides, also salicine in combination with digitalis and nux vomica; rheumatic trouble better, but no improvement of heart-trouble. She had also been taking tr. citro chlor. ferri. Put her on sodio-salicylate caffeine, 0.15 gramme four times a day; improvement from beginning of exhibition of drug; well in fourteen days; heart-murmurs and valvular sounds normal. For chlorosis gave her at the same time pil. Blaudii.

CASE II.—James M. D., millwright, æt. 36, endo- and pericarditis rheumatica. Had a subacute attack of inflammatory rheumatism in beginning of winter, leaving him with this complication. Put him on 0.20-gramme doses four times a day; steady improvement from beginning of exhibition; no other treatment used.

CASE III.—Mrs. P., æt. 32, chronic endocarditis following rheumatism, aortic and mitral insufficiency, pericarditis, congestion of left lung from pressure, anæmia; gave her sodio-salicylate caffeine, 0.10 gramme four to six times a day; quite a good deal of improvement; was when treatment first commenced unable to move around; in a few weeks went to Chicago, and there, through exposure having an acute attack, came under Prof. Davis, Jr.'s, treatment.

CASE IV.—Mrs. T., æt. 33, neuralgia migraine, pain over præcordia, uterine troubles; has had unbearable pains in head and over heart; was put upon 0.20 gramme three times a day when migraine and pain over heart was bad, otherwise morning and night; steady improvement from exhibition of drug.

These cases are the most important I have notes of; have given it a few more times, but have no notes. Of course these few cases are entirely too small in amount to form an opinion from; still, as they have given me

good results I can recommend it for further trial.

The mode of preparing is not very complicated, and I will append the formula Mr. Johnson has been using. The Germans seem to use not only the salicylic double salt, but also the double salts of benzoic and cinnamic acids, and those can be prepared in the same manner as this, only substituting the respective acids instead of salicylic:

R Caffeine (pure), 50 grammes;
Acid salicylic, 32 grammes;
Hydrate soda,
Distilled water, aa q. s.;
Salicyl. soda, enough to make 100 grammes.

Heat the caffeine in a capsule (porcelain) with about six hundred and fifty grammes distilled water, add the salicylic acid till dissolved; then add the solution of caustic soda till nearly neutral; leave it slightly acid; it will even be better to preserve a portion of the acid solution, so if the remainder should be alkaline it can be corrected; evaporate the neutralized solution on water-bath to a granular powder; then powder to an impalpable substance, and to this add enough salicyl. soda to make one hundred grammes by weight.

Iodol.—*Tetraiodopyrrol.*—This substance has of late claimed some attention from therapeutic writers as a substitute for and as superior to iodoform as an antiseptic. If it is superior I do not know; that it is equal to iodoform in many respects I do know. I have used it in about a dozen cases of ulcers of the rectum and erosions of the uterine cervix and indolent ulcers of the leg,—cases where I formerly always employed iodoform. In all those cases the iodol has acted fully as well, and, it seems to me, even better than iodoform. If it will serve me as well in the future as it hitherto has, I shall again report on the subject. Iodol is a yellowish-brown impalpable powder, without smell or taste, insoluble in water, but easily decomposed by light and organic substances. It then gives off the pyrrol, and free iodine will be the result, somewhat similar in this respect to iodoform,—the percentage of iodine is about the same, or ninety-two per cent. in the one and ninety-five per cent. in the other. Its greatest merit lies in its being odorless and non-toxicant, also being very light and impalpable. I see some German authors claim good results from it in the treatment of laryngeal phthisis and epithelioma. From my experience I should be inclined to think it valuable in those affections.

Resorcin.—This preparation, which now has been in use for several years, belongs to the phenol group, and is prepared by fusing caustic soda or potash with galbanum, assa-fœtida, or gum ammoniac, afterwards extracting and subliming. It is mostly prepared synthetically from several substances. It has been recommended as an antiseptic, antipyretic, and antifermentative. It was originally introduced as a remedy for cystitis and chronic gonorrhœa. I have for years been using it in the treatment of cystitis, both locally and internally; in both ways it has served me well. For chronic cystitis, used as a topical application in strength of ten per cent. to twenty per cent. solution, it sometimes succeeds when other measures fail. In gonorrhœa I have never used it. But I want to call your attention to its use in cholera infantum, in which I have found it exceedingly valuable. Believing, as I do, that the summer diarrhœa of infants and children always is caused by errors in diet or by changes produced by the excessive heat,—this change mostly consisting in fermentative processes,—I vainly looked about for a good anti-fermentative which at the same time it would stop the formation of the ferments would not be too irritant to the inflamed surfaces of the stomach, and at the same time act as an antipyretic; at last my thoughts concentrated upon resorcin, and for the last three years I have constantly been using it. It has served me well: after only giving a few doses of it the discharges will be nearly entirely odorless, the stomach will regain its wonted strength. The doses I have employed have varied from 3 centigrammes to 50 or more for an adult. In adults I have mainly employed it for fermentative dyspepsia,—i.e., gaseous or flatulent dyspepsia (indigestion). I have also employed it in pertussis on the recommendation of a Brazilian physician, Dr. Freire, I believe. I have used it in the form of a spray, the strength varying from five per cent. to twenty per cent.,—the spray to be faithfully applied every two or three hours, according to frequency of coughing attacks. By the use of those sprays I have been able to cut short every attack of pertussis, and often in two or three days abort this disease, which otherwise runs a course of weeks. I cannot too highly recommend it, especially as it is rather pleasant in its taste, being sweetish, and soothing in its effect. I also think that in resorcin we have a remedy for the bugbear "rose fever," hay fever, summer coryza, or what it may be called. In a spray

of thirty per cent. to fifty per cent. solution applied two or three times a day I have found it of great service. But where resorcin will be and is of greatest utility is in the treatment of infantile eczema of a chronic type, with hard, scaly eruptions, indurated base, and highly-inflamed surrounding tissue, with a violet or dark-red color, showing that the true dermis (vera) is at fault. In those cases I can confidently assure you, gentlemen, that a few applications of a salve consisting of resorcin, oxide of zinc (equal parts), and cold cream (ten parts) will soon bring on a change, causing the eruption to dry up and heal, the inflamed tissues to assume a natural color. Sometimes it will be necessary to use nitrate of silver solution in addition, to be applied a few times, always previous to the application of the salve. This solution should be rather strong, one or two or three grammes to thirty grammes. It will also be found of great service in the treatment of all other scaly eczemas of a chronic type. In the acute type it is of very little service. It is of value in the treatment of psoriasis, prurigo, eczema barbæ, acne rosaceæ, and other skin-diseases of the same character.

*SIERRA SALVIA, OR ROCKY MOUNTAIN
SAGE.*

BY A. COMSTOCK, M.D., WESTCLIFFE, COL.

THE readers of the GAZETTE may recall an article printed in this magazine about six years ago relating to the same topic as given above. I then had personally met this plant and observed it for about one year, and was impressed with its value as a therapeutic aid. After the interval of half a dozen years in experience and inquiry I am more inclined to urge the profession to test its virtues than when I knew less of it. This humble plant naturally would attract but little comment from the laity, and has no history in the literature of the land of its habitat. In fact, it shares the fate of nearly every detail of botany in the same region, chiefly, I doubt not, because most people who have passed over this section have been either too indolent or otherwise too occupied to give the leisure required; and further, but a few years have passed since most of the area producing this growth has been released from the native Indian or Mexican. The traditions of those who for centuries have hunted over these plains and mountain-slopes connects the sage

referred to with a long list of local diseases. It is not improbable from all I can learn that it had a high place with several generations of the race we call the American Indian, if not with the Aztecs, the Toltecs, the Moyas, and Ouiches, when they extended a type of civilization over these parts of a better sort than has ever been known since the days of Uxmal and Aunhoc. Any one passing over the plain, after leaving the Missouri River towards the mountains, on any of the central lines of railway travel may have observed a pale-green tuft of leaves, persistently covering part of the dry belt, at almost any elevation from four thousand to eight thousand feet above sea-level. It does not flourish in the rainless belt, but better in the region which secures a rainfall of not less than a dozen inches. The rich pale green is perennial, and after a slight fall of snow has melted it exhibits a gloss of rare beauty in lustre. The plant is perennial, and this appearance is a sequel to the winter blasts which have denuded it of its season's bloom, or what is left from the cropping of the antelope or cattle or sheep when fodder is short. If protection is furnished by fencing, and when the sun reaches its northern June limit, one of these bunches, not larger than the palm of the hand, sends up shoots, if fairly well nourished, a dozen in number, and to a height of fifteen to seventeen inches. The root does not penetrate beneath the surface much beyond half a dozen inches as a tap, and, like the buffalo- (or bison-) grass which it accompanies, must retain a vitality almost anhydrous for some months of the year.

The portion used is the superstructure, which ripens during the latter part of August, but must be gathered for medicinal use in the early stage of bloom, and just as soon as the pale-yellow shade tinges the pollen. The arrangement of the flowers on the stem is of a class known as "indeterminate inflorescence," and of the racemose type. If poorly nourished, it becomes purely and classically a raceme; but under more favorable conditions (say along the margin of an irrigating ditch, or a freshly-made mining prospect) it develops to the more fruitful panicle. The leaf is crenated and fascicled, but not pointed or spicate, nor supplied with silica, but soft as plush. Small bractlets shoot out in rapid succession with the first summer showers, alternate, and about three-fourths of an inch apart, till near the apex, where they are not one-fourth distant. The little green globules expand at the distal part and form a cotyli-

form receptacle for the pistils and stamens. The seed, when ripened, resembles that of a grass named after Mr. "Timothy" Hanson (who introduced about a century since the specimen to England, where it is known as the "cat's-tail grass"), and well known in this country. I have counted fifty seeds in a cup, and between three and four thousand cups from a single root, or about two hundred thousand seeds in grass.

The maladies incident to the region where the plant is found are such as would be natural to expect from the sudden changes from hot to cold, due to conditions so clearly defined and illustrated in the report of Prof. Langley upon high altitudes. A clear sky is overcast with dense clouds, and an evening shower follows which may depress the thermometer from 90° to 50° F. in an hour's time, and hence one exposed and overtaken while riding will suffer from an abrupt and almost complete suppression of the offices of the skin. As a result the kidneys may suffer, or the lungs, or what is here termed the "mountain fever," which uncomplicated involves the upper spine, when the cord is congested in the region of the cervical ganglia, extending perhaps through the entire tract. The chill announcing it is a signal for an active system of relief or a long and tedious convalescence. Whilst quinine was formerly used and seems to be indicated, the dry skin and high temperature with cerebral congestion is best allayed by an infusion of the mountain sage. Other animals than man appreciate it, and in the coldest portions of the year antelope, deer, and even grouse are fond of securing its tonic effect, and will consume of it so freely that late in winter their tissues are flavored with it.

From personal experiment and observation in many climates, from the range to coast, for several years I find it the most effective single ally in cases of periodic fever, rheumatic or neuralgic affections, the exanthemata, diphtheria, and kidney-troubles of the type where a diaphoretic or diuretic is required, of any named in the entire list of *materia medica* products. If taken hot, it at once affects the capillaries, as would be expected from the office of the stomach in digestion, and a free diaphoresis follows. When used cold, it acts upon the kidney in from three to five hours, and often in one-half this time. It should be taken freely diluted, and quite unlike the former teachings in that respect. In wine-glassful portions, and as often as three times per hour till full effects are induced, and with

no prescribed amount, is now my custom. Not more than three-fourths to one-half a drachm of the bloom to a pint of boiling water, and steeped as cautiously as the most delicate cup of tea, or till the fibres settle to the bottom of the china bowl (for no metal should be used), when it is ready for use, and may be taken not as a medicine, but as freely as the patient be inclined, always after retiring to get the best results for action on the skin and to quiet nervous irritation. I am also fond of using the infusion as the basis of a lemonade, if acid is indicated, sweetened, etc., to taste. For a tonic and taken cold, it may be taken in less quantity, say a wineglassful, as the Germans use the hot or cold water for gastric irrigation. In the latter case it may be used stronger, and of late Messrs. Parke, Davis & Co., Detroit, have put up a fluid extract which concentrates the elements in a very neat form. I used to advise a proportion which I am now convinced is too strong, and find about one-half a fluidrachm will be tolerated and act best when diluted with a full pint of hot water and allowed to cool, being meanwhile covered so that none shall volatilize by way of steam. If, however, the infusion from the herb be preferred, do not spoil it by making it too strong, and always prepare fresh every day. For the cases indicated it is not improbable that, when patiently tested, it will become as much a staple as the cinchona preparations of South America, the cloves of South Africa, or the rheum of Asiatic India and China.

CURIOSITIES OF THERAPEUTICS.

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IV. MYSTICAL AND CELESTIAL MEDICINE.

THE belief and teachings regarding a Supreme Intelligence as inculcated within the secret and sacred precincts of the Mysteries, had marked influence upon scientific development and progress. Since the Supreme was the source of All, only by the various paths of knowledge could be reached the "narrow gate" opening upon the "straightened way" leading unto "Perfection."* The

* This was the language of the *Mysteries*; and here is found the meaning of the utterance recorded by Matthew (vii. 14), "*For narrow is the gate and straightened the way that leadeth unto Life; and few be they that find it.*" The word that is translated "*destruction*" in the

educational world at this time was purely scientific: the miraculous was deemed the refuge of timid, inconsequent, and vulgar minds: and it was recognized that all things were governed by laws in which accident and chance had no part. But with the decline of knowledge, it being a mystical and caste privilege, the Truth was buried with the secrets of the Colleges, or survived merely as esotericisms and enigmas, the key to which was soon lost; consequently the exoteric in form of vulgar superstitions chiefly obtained.

The twelve degrees or schools of the Colleges were progressively educative, the ultimate goal being the utmost familiarity with *Matter*, or what is now generally understood by "Life" and "Nature." *Matter* was defined as the *Supreme in verity*,—"that from which all things originate, past, present, and future; that which is without beginning or end; and that to which all things must ultimately return,"—a subtle intangible Ether or Essence, all-permeant and permeable, eternal in existence, omnipotent in power, incontrovertible and everlasting as to fact, without which *nothing* is possible.

The "Nebular Hypothesis" of the present was better known and more completely elaborated in the past.† It was taught that from the Essence the four *Principles* or *Elements* resolved themselves, whence was derived *Form*: and Form with the Essence superimposed gave *Life*, and Intelligence proportional to the relationships subsequently established by development and cultivation, said relationships being capable of stimulation. Intelligence might be strengthened by absorption from the Supreme direct, or indirectly through and at the expense of the Elemental. Life, though essentially and physiologically considered as a part of the elemental and corporeal, in that it is dependent upon the ability of the

subsequent passage, more properly would be rendered ignorance or oblivion. The *Proverbs* of Solomon are especially interesting in this connection, as not only embodying many of the tenets and esotericisms of the *Mysteries*, but as being the best specimen of Mystical language and teaching extant.

† "The world moves," but after all only in a circle. Strange as it may seem, scientific belief regarding organic life,—the molecular theory of Faraday, philosophy of Kant, Schopenhauer, Mac Vicar, Huefland, Crookes, Spencer, etc.,—as formulated by the most advanced thought of the present age, all tend towards the goal apparently reached by the *Mysteries* more than thirty centuries ago. The "universal ether," "ambient fluid," "vital principle," "electro-magnético-intellectual-divine fluid" of various authors, one and all appear as forms of the Supreme Intelligence as defined by the ancient philosophers.

latter to support it, and the latter in turn dependent upon it for continuance, is yet in some sense a unit as a separate and separable intangible *immediate* of the Derivative and superimposed upon the *remote*.^{*} All things save the One are self-limited: each has its rise, fastigium, and decay; and in consonance with this law of the Supreme, corporeal existence is transitory. When the body by process of exhaustion, natural or otherwise, is no longer able to support the Essence, Death follows, when the latter returns to the Original, and the former completes the disintegrating process that resolves it again into the Elemental; and when the Mundane has also accomplished its fastigium, and is again resolved into *Matter*,—i.e., returned to the Supreme,—the body and spirit unite, in that both are merged into the Great Intelligence. This is the origin of the doctrines of the *soul*, of *future state of existence*, of a *resurrection*, etc., that, with the decay of knowledge subsequent upon the perversion and subsidence of Mystical teaching, developed from vulgar exotericisms.

Again, the phenomena involved in œstruation, menstruation, ovulation, and reproduction of the species, manifestly were thoroughly understood in all their psychical and physiological relations. The oldest Egyptian, Hindu, and Chinese records define menstruation or ovulation as the preparation of a germ for the reception of independent life; conception as the sequel to physical conjunction of the two sexes, during which each psychically parts with a portion of its individual essence, whereby is accomplished the vitalization of the germ; gestation is the cultivation and development of the envitalization; and parturition is merely the sequel to such development. In the *Soo-Wan* of Hoangti, written forty-five centuries since, Man is described as a little microcosm, or universe in miniature, and a derivative of the Universal Supreme: and to this lesser microcosm is extended the operation of the *yang* and the *yin*, or, in other words, the *male* and *female* principle existing in the Supreme Essence or Intelligence. This is a near approach to modern theories enunciated at instance of the advanced scientific thought of the present hour embodying the doctrine of Matter and Nature: and inasmuch as everywhere throughout the sphere of living organism certain sexual characteristics presented themselves, the idea represented by the principles indicated as *yang* and *yin* is much more

in accordance with the phenomena of living things than that enunciated by Aristotle, which has so long been generally accepted.

The great secret of the higher Mysteries—the graduation of Perfection, so to speak—followed upon an education that developed to the utmost, *psychical power* and rendering such amenable to the individual will. In other words, it was occultation with the Supreme! This was possible only by most thorough and perfect familiarity with, and comprehension of, the secrets of Nature, the relation of natural phenomena and laws by series one to another, and the application of the power of thought-concentration and mental isolation to the production of biologic conditions, such as we are now pleased to term ecstasy, catalepsy, etc. Simple ecstasy, however, was recognized merely as a delusion, or a neurosis, the physiology of which was probably well understood. The clairvoyance of the ecstatic alone was a source of common error, in that it was *not* a sequel to "*Perfection*," but provoked by influences the reverse of will-abnegation and mental isolation: hence "false prophecy" and "false prophets." The higher Mysteries, however, inculcated a profound self-induced and isolated biologic condition beyond the reach of outside will and of human or mundane influence,—a form of catalepsy in fact, whereby the Essence of the individual was supposed to separate itself from the body and become merged into the Supreme or Universal Essence,—and after being enlightened and purified by this mergence it *might* again be returned to reanimate its mortal clay. This is probably the true meaning of the passage in Genesis that describes Enoch † as "walking with God" ("*moving within the Supreme*," literally), and who subsequently "was not"; he united the Essence of his individuality (soul) with the Supreme Intelli-

† Enoch, or *Cân-ock*, the "Initiated," is perhaps identical with the High Pontiff of Mayax, *Cay* the son of *Can-Ah-dama*. In one instance, as has elsewhere been noted (see THERAPEUTIC GAZETTE, August, 1887, p. 539, Appendix K), his head is depicted along with the heads of Coh and Moo, swinging from the belt of his brother Aac, yet there is no proof *he* was murdered, though the records of the deaths of the other two are unmistakable. Considerable space of time must have elapsed between the tragic demise of the unfortunate Coh and the equally tragical death of his "royal wife and sister," and the accounts of their funerals do not favor mutilation other than was customary to prepare the corpses for incineration and visceral embalmment. I opine the representation of Aac with the heads of Cay, Moo, and Coh at his belt, and their flayed bodies at his feet, typifies usurpation of their properties and powers merely.

* See page 664, foot-note regarding *Trinity*.

gence, but it failed to return and revivify the body.*

The *first birth* was the sequel of the development of the maternal germ upon the reception of Life from and through the parents, and the Essence thus derived was necessarily tainted and weakened by mortality. But by mergence and unity with the Supreme, a *new* or *second birth* was accorded, since the Essence was now derived from the Great Intelligence direct, and practically a part thereof. This makes clear the esoteric language of the founder of Christianity, when expressing surprise and rebuke to Nicodemus:

"Verily, verily, I say unto you, Except a man be born anew he cannot see the kingdom of God. . . . That which is of flesh is *flesh*; and that which is born of the Spirit is *spirit*. Marvel not that I say unto thee, Ye must be born anew. The Spirit breatheth" (or *wind bloweth*, as it is commonly translated) "where it listeth, and thou hearest the voice thereof" (or, *art cognizant of its presence*), "but knowest not whence it cometh or whither it goeth. So is every one that is of the Spirit."—John iii.

Again, Nicodemus inquires, "How can these things be?"—a passage that in the original is far from implying the total ignorance of Mystical regeneration it is made to do by modern translators. As one of the Sanhedrim, and a "teacher of Israel," Nicodemus must needs have been in some degree *Mystai*. But whether insufficiently advanced to properly comprehend all that was implied, or imbued with the scepticism that arose from Roman interference and engraftment, it is impossible to determine. He inquires, rather, *why* such phenomena should exist, and is thereupon promptly rebuked, and referred to the proper source of knowledge,—the Mysteries themselves,—by the words, "Art *thou* a teacher of Israel and understand not these things!" The sentence implies reproach and contempt alike that one of such nominal standing should have ignored the opportunities open to him. Remember that Christ was educated in Egypt and a graduate probably of Memphis! Moses was his prototype! And, like the great lawgiver, he abhorred the ignorance in which his people revelled, and sought to lift them from the slough into which they had fallen, and to a knowledge of higher and better things. His aims, his standards, his teachings, all were Mosaic, and consequently *Mystical*. Forbidden to openly reveal the secrets of the Col-

leges, he took refuge in esotericism,—in parables. Little wonder he incurred the displeasure of the priesthood, since they were alike the exponents of mystical teaching, and the head of the political faction that grasped at power for the few and at the expense of the many; and for years the political branch of the Levitical brotherhood had played fast and loose not only with their own, but the surrounding nations. To them the integrity of the Jewish kingdom was nothing if not accompanied with personal power and aggrandizement. The Mysteries had long lost their purity and truth in Palestine, in that, as in Rome, they were prostituted to improper ends,—individual purposes and political power. Manifestly it was to this prostitution no less than the general degeneracy of the Hebraic race that the "son of Mary" referred when he declared it to be "easier for a camel to go through the eye of a needle than for a rich man to enter the kingdom of God,"—*i.e.*, be united with the Supreme;† and on various occasions he bewailed the general moral and mental apathy of the times, when, with faith broken down under the powerful mental and physical strain to which he had been subjected, he was forced to acknowledge his inability to stem the popular tide.‡

Whether the cataleptic or biologic condition first imposed upon the candidate for Perfection as part of his initiation into the highest Mystery was brought about by the *Mystai*, or self-imposed, is open to some speculation. Probably it was purely voluntary. Other initiations, however, embodied an applied ecstasy, since the accounts thereof that appear in the Apocalypse, the Books of "Daniel," the Books of "Enoch," the "Popul-Vuh," etc., imply both visionary and actual occurrences so intermingled as to be incapable of separation in the mind of the neophyte. "*Perfection*" itself, however, was a self-imposed condition, since otherwise there could be no unity with Supreme; and "*Ultimate Perfection*" was final dissolution,—Death!§

The Masters (Mac or Ephori) in the Perfection of the Mysteries, as the result of education, were well skilled in the production of mental and psychical phenomena and the means of nerve-abnegation and control; the teaching and practice was self-concentration of will and segregation of thought whereby

† Matthew xix. 24; Mark x. 25; Luke xviii. 25.

‡ Luke xiii. 32; Luke xiii. 34, 35; xix. 41.

§ Luke xiii. 32, "Go ye and tell that fox: Behold, I cast out devils, and I do cures to-day and to-morrow, and the third I shall be *perfected*."

* See account of Enoch in foot-note to page 529, THERAPEUTIC GAZETTE for August, 1887.

the Essence (soul) was merged in the Supreme wholly untrammelled by mortality, and whereby true conceptions were had of futurity and space: thus was obtained *prophecy*. It was believed that according to the condition of this Essence or soul at the moment of occultation, so was the result. If the mind was *pure*—*i.e.*, freed from all mundane considerations at the moment of emergence,—and the will of the individual self segregated and voluntarily given to the Supreme, the occultation would be perfect and true; but the impure and trammelled soul must fail of Perfection, and the result consequently be misleading.—Just as two fluids of unlike specific gravity are unable to mingle, so a soul handicapped by mundane influences could not be perfectly merged into the Supreme: and as it must go out to the Great Intelligence impure, so it returned attended by the same earthly error. If pure, it came back imbued with new life and spirituality.*

That knowledge of the higher biologic condition was deemed direct communication with the Supreme is frequently evidenced by the sacred writings of the Hebrews, and constant allusions therein to the "*Spirit of God*" descending upon the "prophets"—*Mac*. These were men of the higher Mysteries, mentally "Perfected,"—that is to say, capable of segregating the mental from the physical. "False prophets," on the contrary, were those possessing knowledge of the *ecstatic* condition, which they mistakenly deemed the higher and *complete* form of *mergence*. By the expert this false catalepsy was defined as the "inharmonious action and relation of the individual *Essence* within itself." Mergence, on the contrary, was harmony of the *individual* with the *Supernal*! Death was permanent harmony, though not complete until the body, which resolves itself into the four original elements, shall be returned to the Essence by reabsorption.

The doctrine of *sin* appears to have arisen from the theory that the *pure* and the *impure* cannot mingle,† hence it was believed that impure Essences were segregated at Death, or under attempted emanation, yet retained their individuality until such impurities were lost. Meantime they were forced to wander in expiation, ever in the midst of (perhaps in absolute contact with) the Supreme, but tortured by inability to resolve themselves. An impure soul having vainly attempted Perfection, since

it could not be improved, must needs become worse, since it is not within the province of anything to stand still; and this is the key to the passage regarding "seven other spirits more evil than himself," and the "last state of that man is worse than the first."‡ Non-mergence and inability to *Perfect*, whether temporary or final, was also typified as "*outer darkness*."

The earliest history of civilized man reveals the prevalence of the doctrine of emanation, and it is easy to surmise its development from and through the Mysticism of Primitivism.§ It was inculcated by the most ancient Maya, Egyptian, Chaldean, Chinese, and Hindu authorities; it was taught by Zoroaster and Mahomet, and is the doctrine of the Lama Buddhists; it is also the foundation of the Vedas, which declare, "In truth there is but one Deity, the Supreme Spirit, and of Him is the *nature and soul of man*." Again, the Vedas, like the Institutes of Menu, affirm the soul to be an emanation of the All-Pervading Intellect, and that, since the latter alone of all the Universe is stable, the soul is necessarily destined to be reabsorbed: further is added, this Essence is without form and visible nature, and with all its beauties and harmonies, is merely the shadow of the Supreme.||

From Vedaism was derived modern Buddhism, the faith of a majority of the human race, that defines a Supreme Being as a part of the Supreme Intelligence: this is the earliest form of anthropomorphosis, and the beginning, doubtless, of the Trinity.¶ It contemplates the existence of an Essential influence that may, if you please, be termed *Force*, giving rise to *Matter*,** and also suggests a soul

‡ Luke xi. 26.

§ See THERAPEUTIC GAZETTE for April and May, 1887.

|| THERAPEUTIC GAZETTE, April, 1887, p. 229; Draper's "Conflict of Religion and Science," p. 132.

¶ I opine the real key to the Trinitarian Doctrine is something as follows. The Essence is triune in that it is the *Derivative* (Tha, or in the Greek *Patha*, translated "father"); the Product (or son of itself); and the Animative (spirit) of all things: truly, the "*Three are One*!" When Christ declares he is "of the Father" (*Patha*) and the "Father of me," he speaks esoterically of higher Mystical knowledge, and refers to his own "*New Birth*."

** In the burning taper the disciple of Buddha sees the effigy of Man: an embodiment of Matter as the sequel to the evolution of Force. If interrogated as to the destiny of the soul he demands, What has become of the flame when extinguished? What was its condition before it was called into existence, before the taper was lighted? Was it nonentity? Was it derived from nothing? Has it been assimilated? See Draper's "Conflict," p. 122.

* Luke x. 22, 24; xi. 34, 35; xiii. 21, 24.

† Luke xi. 24, "When the unclean spirit is gone out of a man, he walketh through dry places, seeking rest and finding none. He saith, I will return unto my dwelling whence I came out," etc.

personality that deludes man throughout his mundane existence, and that is not necessarily extinguished by Death, but perhaps may be lost by progressive stages or degrees. On this latter, too, is founded the theory of transmigration.* Ultimately, however, reunion with the Supreme will follow, when *Nirwana*, or Perfection, will be reached, and oblivion obtained:—a state or condition that has no relation to space or time,—the state into which the flame disappears when extinguished,—that in which Man was before he appeared on the earth and while without individuality, and before the earth even had been called into existence! This is the end all ought to hope for,—viz., reabsorption into the Supreme and Divine Intellect, whereby is obtained perfect mergeance and “*eternal rest*.”

These ideas openly obtained among the higher minds of Europe up to the sixteenth century, when they were partially suppressed by ecclesiastical authority. They did not die, however, but merely slept, to rise and assert themselves anew and more boldly in this present century. In the third century Plotinus taught emanation unchallenged, for the Mystical doctrines were not altogether forgotten. From the Alexandrian Greeks the Saracen philosophers derived it anew, and soon after the capture of the art and literary metropolis of Egypt and the world, the educated Moslems abandoned to the lower and vulgar orders the anthropomorphic ideas of Nature and the Supreme, and the simulachral form of the soul.† A native of Britain, John Erigena, A.D.

* See page 669.

† As Arabism developed into a distinct scientific system, the theory of emanation and absorption became one of its most characteristic features. In thus abandoning vulgar Islamism, the example of the Jews no doubt contributed, for they had exchanged the anthropomorphic being, whose home was behind the veil of the Temple, for an infinite Intelligence, pervading universal space, avowing their inability to conceive of anything which, suddenly and abruptly called into existence, should possess attributes of immortality: they affirmed the soul of man must needs be connected with that which had neither beginning nor end if its immortality was unquestionable! So, too, to-day we find progressive Hebrews in the foremost ranks of scientists, and deriding the anthropomorphic Jehovah of the orthodox Jew.

“In the intellectual history of Arabism the Jew and the Saracen are continually found together. It was the same in their political history, whether considered in Syria, Egypt, or Spain. From these conjointly Western Europe derived the philosophical ideas past and present,—ideas that soon culminated in Aveoroism. Aveoroism is philosophical Islamism; and though we are accustomed to regard Aveorois as the author of these heresies, and the orthodox have so branded him, in truth

800, also taught that every living thing must necessarily proceed from something that had before possessed existence.‡ The visible world, being a world of life, has therefore necessarily emanated from some primordial existence, and that existence is the Supreme itself, who is thus the originator and conservator of all. Whatever is visible to the eye is also maintained by force derived from and as a part of the Supreme, and were that force and supremacy withdrawn it would instantaneously vanish. Erigena thus conceives Deity as an incessant participator in *all* existence, being the upholder, preserver, and derivant, answering to the “soul of the world” expressed by the Greeks. The *particular* life of individuals is, therefore, a part of *general* existence,—that is, of the Essence or “mundane soul,” which is the key to the sympathy existing—though perhaps obscurely to mortal minds—between different individuals, and also widely different classes of life. If the maintaining power is withdrawn, or the body is no longer capable of sustaining it, the former must return to the source whence it was derived to be reabsorbed therein. All visible Nature must thus revert to the Supreme at last. “The death of the flesh is the auspices of the restitution of things and of a return to their ancient conservation. So sounds revert back to the air in which they were born, and by which they were maintained, and they are heard no more; no man knows what has become of them. In that final absorption which, after a lapse of time, must necessarily ensue, the Supreme will be All in All, and nothing exist but in It alone.”§

he was merely a collector, compiler, and commentator of the tenets originally promulgated by the Mysteries. His works invaded Christendom by two routes,—*via* Southern France from Saracenic Andalusia, whence they reached Italy, engendering numerous heresies by the way; and from Sicily *via* Naples, being introduced under the auspices of Frederic II.” (Draper’s “Conflict of Religion and Science,” p. 124.)

‡ John Erigena adopted and taught the philosophy of Aristotle, and indulged in the hope of uniting religion and philosophy in the manner proposed by Christian Ecclesiastics, who were then studying in the Saracenic Universities of Spain. Anastasius, in a letter to Charles the Bold, expresses his astonishment how so “barbarous a man, coming from the very ends of the earth (Britain), and remote from human conversation, should comprehend things so clearly, and transfer them into another language so well!” The general drift of his works was philosophic, but his treatment of such subjects in connection with religion brought him under the ban of the Romish Church, and, after undergoing severe personal censure, many of his books were condemned to the flames.

§ “I contemplate Him as the beginning and cause of all things: all things that are, and those that have been,

Again, Al-Gazzali (A.D. 1010), the most powerful of Saracenic philosophers, wrote: "God has exalted the spirit of man out of a drop of his own light: its destiny is to return to Him. Do not deceive yourself with the vain imagination it will die when the body dies. The form you had upon your entrance into this world and your present form are not the same; hence there is no necessity of your perishing on account of the perishing of your body. Your spirit came into this world a stranger: it is only sojourning in its temporary home. From the trials and tempests of this troublesome life our refuge is God. In reunion with Him we shall find eternal rest,—a rest without sorrow, a joy without pain, a strength without infirmity, a knowledge without a doubt, a tranquil yet ecstatic vision of the source of life and light and glory, the source from whence we came."*

So silently and extensively have these ideas been developed by the education and scientific progress of our time, that it was deemed

but now are not, were created from Him, and by Him, and in Him. I also view Him as the end and intransgressible term of all things. . . . There is a fourfold conception of universal nature,—two views of divine nature, an origin and an end; two also of framed nature, cause and effects. There is nothing eternal but God." (Erigena's "De Divisione Naturæ.")

* "It was in India that men first recognized the fact that Force is indestructible and eternal (see page 662). This implies more or less distinct ideas of that which we now term *force correlation* and *force conservation*. Considerations connected with the stability of the Universe give strength to this view, since it is clear that were there either increase or diminution the order of the world must cease. The definite and invariable amount of energy in the Universe must therefore be accepted as a scientific fact. The changes we witness are *in its distributions*. But, since the soul must be regarded as an active principle, to call a new one into existence out of nothing is necessarily to add to the *force* previously in the world. And if this has been done in the case of every individual who has been born, and is to be repeated for every individual hereafter, the totality of *force* must be constantly increasing. Moreover, to many very devout persons there is something most revolting in the suggestion that the Almighty is a servitor to the lusts and caprices of man, and that, at a certain time after its origin, it is necessary for him to create for the embryo a soul. Considering man as composed of two factors, a body and a soul, the obvious relation of the former may cast much light on the mysterious, the obscure, relations of the latter. Now the substance of which the body consists is obtained from the general mass of matter around us, and after death to that general mass it is restored. Has nature, then, displayed before our eyes in the origin, mutations, and destiny of the material part, the body, a revelation that may guide us to a knowledge of the origin and destiny of its companion, the spiritual part, or the soul?" (Draper's "Conflict of Religion and Science," p. 127.)

expedient in the Papal Syllabus to draw them into open light, and that, too, in the most conspicuous manner. Accordingly, the last Œcumenical, or Council of the Vatican, aiming to throttle, or at least upset, a tendency so obnoxious and dangerous to the tenets of the Romish Church, in an equally prominent and signal manner promulgated among the first of its canons, an anathema of all who dared hold such advanced views.†

There was a broad gulf between the *Masters*, *Mac*, or more advanced of the Mystai, and those who were merely cognizant of the lesser Mysteries, and also between the latter and the great masses of humanity. This was the result on one side of imperfect education, on the other of total and abject ignorance, and in part also of an esotericism that was deemed essential *per se*. This is the secret of discoveries and expressions belonging to the same ages and eras that apparently inculcate conflicting ideas; and it is ever the fault of humanity that it judges of the impressionable rather than the real, whereby history is made up of the details of individuals rather than of the race as a whole of which they were merely factors. Thus, too, popular delusions are accepted as creeds, or as the sequence of laws that in reality are contrary and inimical to such de-

† "Let him be anathema—who denies the one and true God, Creator, and Lord of all things, visible and invisible: who unblushingly affirms that beside matter nothing else exists: who says that the substance or essence of God and of all things is one and the same: who says that finite things, both corporeal and spiritual, or at least spiritual things, are emanations of divine substance; or that the divine essence by manifestation or development of itself, becomes all things: who shall say that man can and ought to, of his own efforts, by means of constant progress, arrive at last at the possession of truth or goodness: who shall refuse to receive, for sacred and canonical, the books of the Holy Scriptures in their integrity, with all their parts, according as they were enumerated by the holy Council of Trent, or shall deny they are inspired by God: who shall say that human reason is in such wise independent, that faith cannot be demanded of it by God: who shall say that divine revelation cannot be rendered credible by external evidences: who shall say that no miracles can be wrought, or that they can never be known with certainty, and that the divine origin of Christianity cannot be proved by them: who shall say that divine revelation includes no mysteries, but that all the dogmas of faith may be understood and demonstrated by reason duly cultivated: who shall say that all human sciences ought to be pursued in such spirit of freedom that one may be allowed to hold as true their assertions even when opposed to revealed doctrine: who shall say that it may at any time come to pass in the progress of science that the doctrines set forth by the Church must be taken in another sense than that in which the Church has ever received and yet receives them!"

lusions. Man, in his great egoism, is unable to conceive of anything higher or more perfect than himself, consequently he measures and judges all things by his own individual limit and standard. To bring the Supreme within the comprehension of the masses, it was found necessary to invoke anthropomorphism; and thus from the *Mâyâ Thah*, Egyptian *Phtha* or *Kneph*, and the Greek and Chaldean *Pathr*, was evolved the word *Father*, "Creator," or "Engenderer."* The God of the vulgar of this nineteenth century is aptly represented in Watt's hymnology as "seated on a great white throne," and heaven as the court of an absolute monarch, with all the paraphernalia of monarchy, enclosed as a "walled city," the "new Jerusalem:" the scene depicted is the extreme of the vulgar barbaric and Oriental. God differs in no particular from the anthropomorphic *Kneph* of Egypt, *Zeus* of Greece, or *Jupiter* of Rome, since all were taught as "majestic," "awful," "omnipotent," "permeant," and "infinite." It is to the exotericisms of the Mysteries as derived from vulgar sources that we must look for the origin of the Deity of popularism: these exotericisms are the paganisms that were engrafted upon Christianity, and which good Bishop Nestor† combated so vigorously and unsuccessfully. Then, aside from being a false or exoteric creation to serve special and vulgar ends, the error is in part the result of misinterpretation of the Hebrew terms, *Elohim* (*worshipped*) and *Jehovah* (*ever-existing*), words that orthographically, and suggestively, possess a plural significance. So, too, the sentence in Genesis that is universally rendered, "God created man in his own image," in the original exactly conveys the meaning found in the *Manava-Dharma-Sastra*: "And the subtle spirit Intellectual took possession, making (of man) a part of itself,"—i.e., man was imbued with the Essence, or the Supreme. Moses, to be sure, inculcated an

anthropomorphic deity in part, and for reasons obvious to any one who will peruse the Mosaic record: yet careful study reveals something grander, higher, and better behind the veil interposed by him between the higher Mysteries and the knowledge of the impure and vulgar. So, too, men high in the Mysteries were regarded with awe by their immediate inferiors because of their near approach to the Supreme. After occultation, whereby was obtained Perfection, they were of the *Supreme*; hence apotheosis, employed as typical of Perfected purity, easily passed the boundary, whereby individuals were elevated to the rank of deities.‡

Again, the wandering essences of the unperfected after death were supposed to be desirous of re-entering upon mortality in one or another of its forms in order to work out their own purification and expiation, and thus obtain the denied bliss; and such essences might be the cause of error in attempts at occultation by those who were not thoroughly endowed with purity. While some might

‡ Immaculate conceptions and divine descents were currently received by the vulgar both before and after Christ's time, so much so that whoever greatly distinguished himself was thought to be supernaturally endowed. In Rome, even as late as the latter part of the second century, no one would have dared deny the city owed its founder, Romulus, to the accidental meeting of the god Mars with the virgin Rhea Sylvia as she went with her pitcher to the spring. "The Egyptian disciples of Plato," remarks Draper, "would have looked with anger on those who rejected the legend that Perictione, the mother of the great philosopher, was a pure virgin that had suffered an immaculate conception through the influences of Apollo, and that the god had declared to Ariston, to whom she was betrothed, the parentage of the child. While preparations were being made for the final campaign against Darius, Alexander undertook a journey to the temple of Jupiter Ammon, which was situated in an oasis of the Lybian Desert. The oracle declared him to be the son of that god who, under the guise of a serpent, had beguiled Olympias, his mother. Accordingly, when Alexander issued his letters, orders, and decrees, styling himself 'king' and 'son of Jupiter Ammon,' they came to the inhabitants of Syria and Egypt with an authority that now can hardly be realized." That the more educated regarded this as nonsense is evidenced by Olympias, the mother of Alexander, who was accustomed to jest of the matter, declaring she wished her son would cease from incessantly embroiling her with Jupiter's wife. There is not the slightest foundation for presuming the son of Mary, who professed to be an imitator of Moses, ever sought or intended to arrogate to himself divine honors: this was the work of his followers and in accordance with the vulgar custom of the times. He sought only to inculcate the tenets taught by the higher Mysteries; and it will be observed that the educated John and astute Luke are wholly reticent regarding the apotheosis of their Master or Teacher.

* When Christ alludes to his death, the meaning attached to the words "I go to the Father"—Greek, *Pathr*—is quite different from that intended. Again, he declares (Luke xvii. 21), "The kingdom of *Pathr* is within you!" And (John xv. 2), "I am the vine (offshoot) and *Pathr* the husbandman (gatherer) . . . every branch that beareth not good fruit he purifieth." When he mentions himself as the "Son" he does so in the same sense as he employs the word *vine*. Finally, it must be remembered his teachings were esoteric; he expressly states this fact, or that they are *parables* (John xvi. 25).

† It will be remembered that the founder of Islam derived his Mystical knowledge, along with the means of procuring and prolonging the extato-biologic condition, from the Nestorians.

imagine they had discovered the means of separating soul and body, as by ecstasy,* unless possessed of the true knowledge (purity) peculiar to the higher Mystai, they were apt to be led astray by these wandering "spirits of evil," and unwittingly, perhaps, exchange souls,—i.e., spiritual identity: this was a prolific source of "false prophecy." It was to preserve the corporeal from such influences—as the vulgar supposed—that it was inhumed, cremated, or placed within the "tower of silence;"† and with like view the Thibetan Buddhists yet condemn the corpses of the poor to be devoured by sacred birds and beasts, while the wealthy, when deemed *articulo mortis*, are assisted out of the world by lifting the scalp and making an opening through the skull, whereby is hastened the escape of the essence, and the body rendered uninhabitable to other essences that may desire to reanimate it.‡

The *Mystai* held disease to be sequel of impression, whereby the harmonious relations of the essence are interrupted. By such inharmony through the medium of the nervous system, morbid changes are induced in the physical.§ The physical or animal portion of

* Plotonius, who taught the doctrine of emanation, believed the soul might be united to the Deity by ecstasy alone, thereby obtaining a foretaste of absorption into the Universal Soul. In like manner Porphyry sought union with God, and bewailed his own worthlessness, saying he had been so favored but once in eighty-six years, whereas his master had six times been so united in sixty years.

† The Parsee, or religion of Zoroaster, was originally a mystical monotheism, its aim being moral and intellectual purity and perfection. It teaches the Supreme in all things. The sun, the fire, the light, all are derived from the Supreme, and are typical thereof, and ultimately must return whence they came.

‡ Is not this the probable cause of the holes found in the vertex of the crania of many of the mysterious extinct race of America known as "Platycnemic Men," or "Mound-Builders"? In certain districts explored by the writer, every skull found was thus perforated by at least one opening, five-eighths of an inch in diameter perhaps, and in some instances, though rarely, by two. Such evidence as is at command leads to the belief, moreover, that the openings were made immediately before or immediately following death.

§ It is now well understood that the ganglionic nervous system is automatically impressionable beyond all source of measure or computation: we can only obtain conception thereof by comparison with other objects. For instance, if a wafer be laid upon a piece of highly polished steel, and the latter then be breathed upon, when the moisture has disappeared, and the wafer removed, the most critical scrutiny, even with microscopic aid, fails to discover the trace of any form; but breathe thereon again, and a spectral image of the wafer comes

the economy is of secondary consideration only, serving only to define an essence,—which, however, is not thereby rendered wholly independent,—a form through which a stream of matter is constantly flowing, receiving supplies from and dismissing wastes into its surroundings, resembling, as Dr. Draper puts it, "a river, cataract, or flame." The particles constituting the physical are inconstant, those present at one instant disappearing the next, its sustenance depending upon the supply. All economies must needs be artificial in nature, since they have not always existed, hence are self-limited, or capable only of three stages,—the rise and development, the acme which encroaches in part upon the other two, and the decay. Nothing stands still in nature, hence when the fastigium is reached, decay with certainty follows, when the vivifying essence returns whence it came, while the body is resolved into the original elements, ultimately to follow its principle. Few modern physiologists, I fancy, will care to dispute these propositions, and they evince greater enlightenment than the world at large, owing to the dogmatic usurpations of theology, has ever been willing to admit. Says Dr. Draper, "In all cases the action of each and every nerve-centre, regardless of its stage, class, or degree of development, depends upon the condition of oxidation. If the supply of arterial blood be for a moment impeded, the nerve mechanism parts with a portion of its power, and becomes more susceptible in its weakness to certain impressions, less so to others: its harmony has been interrupted. If the supply is increased, as when nitrogen monoxide is inhaled, the result obtains as the sequel of more energetic action, and consequently greater nerve waste. This is the necessity that demands sleep and rest as a means of restoring harmony by repair."

plainly into view, and this may be reproduced for months, even years, after the first (and the result of a single) experiment. This proves how trivial an impression may be registered and preserved by an inorganic substance, and that a shadow never falls without leaving a permanent trace, even though it be beyond the power of human vision to detect. (See Appendix L.) How much more impressionable, then, must needs be the ganglia of vesicular nervous material that are constituted special registering *apparati*! Thought is impression, and there is no such thing as spontaneous self-originated thought, for every intellectual act is the sequel of some preceding act essential thereto; and in the origination of thought there must needs be two distinct conditions,—a state of the organism (1) as dependent upon antecedent impression, and (2) on the existing physical circumstance.

Among the vulgar the primitive belief of the derivative origin of disease from* evil essences, universally obtained, and when these took the form of nervous perturbations, such as mania, epilepsy, etc., by the inferior and vulgar they were deemed direct possession by the evil essences of unresolved persons, who usurped the body and its prerogatives to the expulsion or detriment of the original essence. Unable to comprehend the teachings of the *Mystai*, whose exotericisms even were in some measure esoteric, the material essences of the impure that could not enter supreme bliss (be merged into the Great Intelligence) until after expiation and purification,—perhaps not until earth itself should be resolved, when the essence of the body might meet and mingle with that of the soul,—were anthropomorphized in part, whereby arose the doctrine of devils, evil spirits, demons, wandering genii, etc.† Bearing witness in their own personality of the preponderance of impurity or evil, the masses demanded an anthropomorphic spirit to control the force opposed to the pure; hence Dualism, with Pluto and his prototypes. The domain of Tartarus, given to the latter, in time came to

* See THERAPEUTIC GAZETTE, April, 1887, p. 232.

† In the uncertainty as to what becomes of the soul in the interval between its separation from the body and the time it would be again reunited, many different opinions appeared among the unlearned at various different ages. Some thought it hovered over the grave; some that it wandered disconsolate through the air. In the popular belief of Romanism, by an ignorant interpretation of the esotericisms of Matthew xvi. 19, St. Peter sat as a doorkeeper at the gate of heaven, with power to grant or refuse admission at his pleasure. Many were, however, disposed to deny this, since such power would be anticipatory of the judgment, which would thus be rendered needless; consequently after Pope Gregory's time the doctrine of purgatory met with general favor as providing a place for departed spirits. That the spirits of the dead occasionally revisit the living or haunt their former abodes appears to have been a fixed belief in all ages that was by no means confined to the more ignorant. A half-century or century since an enticing pastime was to gather at the fireside of a winter's evening and retail, or listen to, stories of ghosts, apparitions, goblins, etc.; genii are a concomitant of every Eastern tale to this hour, and ghostly narrations are yet common to many Scotch and English hearths. In the old times the Romans had their *lares*, or spirits who had led pure lives, their *larvæ*, or spirits of evil, and *manes*, or those that were of doubtful character. Says Draper, "If human testimony on such subjects can be of any value, there is a body of evidence, reaching from the remotest ages to the present time, as extensive and unimpeachable as is to be found in support of anything whatever, that these shades of the dead congregate near tombstones, or take up their secret abode in the gloomy chambers of dilapidated castles, or walk by moonlight in moody solitude."

be burdened exoterically with various properties in the way of locality, scenery, and surroundings, calculated to appeal to the fears of the ignorant; and as mundane and political considerations usurped the educational and spiritual in the *Mysteries*, so these superstitions were made to serve the ends and aims of a political majority, who, as they became more degraded, adopted them for themselves. The Hebrew *sheol* ("seeking," or place of seeking), and Greek *hades* and *gehenna*† ("shades" and "impurity," referring to the existence of those who were "not in the light"), underwent various transformations, the most elaborate of which, perhaps, is the eighteen-chambered hell of Lamaism, eight of which are freezing cold and ten burning hot.§

(To be continued.)

CARBOLATE OF MERCURY IN SYPHILIS.

DR. SCHADECK has employed carbolate of mercury both internally and hypodermically in syphilis with remarkable success. He gave it in thirty-five cases in the form of a pill without finding it give rise to any gastric disturbance. The formula was,—*R Hydrargyri carbolic oxydati*, ʒiii; *pulv. glycyrrh. q. s. ut. f. massa pil. ex qua form. pil. No. 60*; from two to four pills daily after food. This preparation was originally used by Gamberini in 1886. Dr. Schadeck also employed the carbolate of mercury in ten cases in the form of hypodermic injections, which he administered in the gluteal region, causing the needle to penetrate the muscles deeply. The liquid used was a mucilage containing two per cent. of carbolate of mercury in suspension. In this way his results were as satisfactory as when the preparation was given by the mouth.—*Lancet*, August 6, 1887.

† The word *Gehenna* was applied to a valley in the mountains a short distance from Jerusalem, where was burned the garbage and refuse of the city,—a sanitary measure. Any one connected with this burning or the removal of garbage was of necessity *impure*, as having been in contact with decaying and effete matters. This valley was designated as typical of extreme impurity. The word "outer darkness" or shades, which is so frequently translated hell, appears in the Apostles' Creed, and has been a matter of puzzle to many, but the words "Christ descended into hell" mean simply his spirit passed into the unknown,—*the shades*!

§ Manifestly, the Lamantic-Buddhistic hell is derived in part from some of the hidden workings of the Mysteries.

The Therapeutic Gazette

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DETROIT, MICH., October 15, 1887.

GEO. S. DAVIS, Medical Publisher, Box 470.

SUBSCRIPTION RATES FOR 1887.

(Journal increased to 72 pages.)

THERAPEUTIC GAZETTE (postage included)....\$2.00
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Editorial communications should be addressed 1925 Chestnut Street, Philadelphia. Business communications should be addressed to the publisher.

Leading Articles.

THE TREATMENT OF OBESITY.

EVERY physician in large practice in America must occasionally have to treat cases of excessive fat-production, although it seems to us indisputable that this condition is distinctly more infrequent in the United States than in Germany or even England. The poorer people of Germany are, perforce, frugal, but the richer classes seem to us to indulge much more freely in excessive eating and light wine- or beer-drinking than do Americans, whose nervous energy and haste "to get on" cast into the shade gastronomic pursuits. Observation among our German citizens will, we think, also bear this out: Falstaffian paunches being much more frequent among them than among the native-born. Hence it is that whilst in Germany magnificent institutions exist chiefly or solely devoted to the relief of excessive fatness, and "cures" manifold have wide-spread or local reputations, among the Anglo-Saxon millions Bantingism seems to be the only system which has reached the dignity of a baptismal name.

To discuss all the various German systems

in detail would be at present a wanton task, wasteful of the time of writer and reader, but some account of those at present most fashionable among our Teutonic brethren will, we think, be interesting to the readers of the THERAPEUTIC GAZETTE. Chief among these systems is that which is known as the "Oertelschen-Kur," or more commonly perhaps as the "Schweninger-Kur." It originated with Professor Oertel himself, who during his early childhood received a severe injury which led to sedentary habits, and finally, in 1875, to a condition of excessive corpulence, in which shortness of breath, marked failure of heart-power, complete inability to make any exertion, and increasing dropsy not only caused complete present disablement for work, but threatened eternal quiet in the near future. Medical treatment, mineral waters, baths, and all the efforts of the most renowned physicians of Munich had ended in failure. Finally, in despair, Professor Oertel devised and essayed the plan at present so much in vogue. By excessive exercise it was attempted to destroy the fat already accumulated, whilst by abstention from water and regulation of the diet the formation of new fat should be prevented. Further, it occurred to the sick man that heart and lungs were in a similar condition with the voluntary muscles, and that therefore cardiac and pulmonic gymnastics were as essential as was general physical labor. Any stout person who has climbed an Alpine steep on a hot August day knows full well the strain, the sweat out-pouring, the heart-thumpings, the breast-heavings which accompany such feats. And therefore to the mountains went our young physician, and after much labor and suffering he was rewarded by a regained health which soon led him to fame.

As is well known to our readers, Bantingism consists, in its essence, of the withdrawal of carbohydrates from the food and the living upon a more or less rigidly exclusive nitrogenous diet. If the views held by most modern physiological chemists be correct, that nitrogenous food is in part so split up in the system that fat is formed from it, it is plain that even by an exclusive nitrogenous diet we do not entirely cut off the supply of fat-material; and yet experience shows that in the great majority of cases under such restriction of diet the fat does disappear usually with great rapidity. The practical question is, however, whether the desired end is best obtained by such rigid dieting, and probably few practitioners who have thoroughly tried the plan

are entirely satisfied with it. It has been accused of producing Bright's disease, and it is certain that the excessive use of nitrogenous food does throw a strain upon the renal organs. The danger is, however, to our thinking, too remote to be of great practical importance, excepting in so far as it should lead the physician to occasionally examine the urine of the dieted patient, and if albumen should appear to change the treatment.

More valid objections are the chilliness and weakness, from which patients often suffer although the albuminous food is allowed in quantity, and the ever-increasing repugnance to meats, which in some cases becomes almost unconquerable. This chilliness and the longing for hydrocarbons seem to be based upon an actual need of the system for fresh hydrocarbon, and Professor Voit affirms that he has seen dogs fed upon an exclusively albuminous diet perish of inanition. Moreover, in some cases of Bantingism the stomach rebels altogether against flesh-digestion, and severe dyspeptic symptoms develop, whilst, if there be any tendency whatever to gout, arthritic symptoms rapidly become severe. As an exclusive, final method that devised by Dr. Harvey for the treatment of the corpulent Banting is, to put it mildly, not finally satisfactory.

A dietetic treatment of corpulence which has been much practised in Germany is that devised by Professor Ebstein, and generally known as the Ebstein method. It is simply a modification of the plan employed by Harvey. Three meals a day are allowed, the whole routine being as follows :

Breakfast.—Two hundred and fifty grammes of tea without sugar or milk ; fifty grammes of white bread, with much butter.

Lunch.—Fatty-soup, made from a marrow-bone ; one hundred and twenty to one hundred and eighty grammes of flesh, containing much fat ; some vegetables ; stewed fruit without sugar ; two or three glasses of wine. Later in afternoon, one cup of tea without milk or sugar.

Evening.—One cup of tea without milk or sugar, thirty grammes of bread and butter, one egg, or a piece of fat ham or fat roast meat, or cheese, and fresh fruit ; no alcohol.

As the result of living upon this diet, Ebstein, who was his own first patient, lost in the course of the year eighteen German pounds. He states that the use of the fat produced a sense of satiety, and stilled the thirst and carbon-longing, which are often so severe under Bantingism. The originality of the Ebstein cure seems to consist in the relief of

the hydrocarbon appetite by fat. It is largely employed in Germany, and has even been tried with asserted good results upon animals, especially upon the pug-dogs of the German dowagers. Vogel, in Stuttgart, is affirmed to have reduced a dog five hundred and eighty-five grammes in a week by administering daily three pounds of oatmeal, and at first one hundred grammes of fat, increased to one hundred and thirty grammes.

There can be no doubt that the rational treatment of acquired corpulence consists in the regulation of diet and exercise, and that it must be crowned with success if the plan be well devised and carefully carried out. The term *acquired* corpulence is used here advisedly, for there are certain families in which excessive fat-production is so constitutional that the most that can be done is to keep in check an inherited tendency.

The diet-problem when studied naturally divides into four parts : first, the quantity to be allowed ; second, relative amount of flesh, starches, hydrocarbon, and fats ; third, use of water ; fourth, use of alcohol.

Of these problems the last is so easily and plainly solved that it is well to get it out of the way immediately. Alcohol is never necessary to a well-fed, healthy man : it is a pure hydrocarbon, capable of saving fat. Its excessive use, especially in the form of beer, is a common cause of corpulence. Hence theoretically it should be denied entirely to the patient. If, however, the previous habits have been such that it is impossible to stop its use abruptly, it should be as rapidly withdrawn as can be done, and should when given never be in the form of a malt liquor, but of a light wine of such poor quality that the patient can be the more readily weaned from it.

In the great majority of cases it is excessive quantity rather than improper quality of food which causes corpulence, and reduction of the quantity is therefore the first aim of the practitioner. A little book published in England, which has hardly attracted the attention of the profession that it deserves, teaches just here a useful lesson. In this "Advice to Fat People" the anonymous captain of a British regiment states that for thirty-eight years he had been a martyr to obesity. At birth he "was an enormous freak of nature that was clearly intended for twins." At eighteen he weighed eighteen stone. Banting taught that "quantity may fairly be left to the natural appetite, provided the quality is rigidly adhered to." Our captain asserts that quantity is even more important than quality. In about ten months

he reduced his weight one hundred and seven pounds and his girth eighteen inches by closely adhering to the following dietary :

At 6 A.M., one pint of black coffee and one ounce of coarse brown bread or biscuit.

At 9 A.M., four ounces of lean meat, three ounces of brown bread or biscuit, and half a pint of coffee.

At 2 P.M., six ounces lean meat, three ounces brown bread or biscuit, six ounces green vegetables, and half a pint of any fluid, except ale, effervescing wines, or aerated water, followed by half a pint of coffee.

At 6 P.M., half a pint of coffee.

At supper, two ounces brown bread or biscuit, a couple of glasses of sherry or claret.

Our hero further affirms that fruit may be taken *ad libitum*, and that vegetables which grow above ground, such as cauliflowers (except peas, beans, and rice), are good, but those which grow below ground "are fat persons' poison." Liquorice powder is to be taken at bedtime *pro re nata*.

The average amount of food required by the human adult is generally acknowledged by competent authorities to be about as follows :

Albuminous materials.	Fat.	Starchy carbohydrates.
30 drachms.	25 drachms.	92 drachms.

The analysis of the ration allowed Mr. Banting, given by Dr. Carl Zahn, shows that he took daily

Albuminous material.	Fat.	Carbohydrates.
43 drachms.	2 drachms.	5.25 drachms.

whilst the Ebstein ration allowed contains

Albuminous material.	Fat.	Carbohydrates.
25.5 drachms.	21.25 drachms.	11.75 grammes.

It will at once be seen that the Ebstein ration furnishes much less of hydrocarbons to the system than is required for its support, and that the system is, as already stated, only a mild Bantingism. When it comes to the individual case of excessive corpulency, it is to our thinking very clear that no hard and fast rules, either as to diet or exercise, are allowable, but that each patient—his present, his past, his likes and dislikes, constitutional tendencies, etc.—must be carefully studied by the physician, and a special diet list and exercise programme be made out. General directions as to amount of food are sometimes sufficient, but usually will not suffice. To weigh the food and drink may be troublesome, but when the corpulency is very pronounced or very obstinate the scales are a necessity, and the daily ration must be accurately determined. Almost always it will be found that the patient has been eating far beyond the needs of the system. Care should be exercised in immediately reducing the amount, even entirely to the ration laid down as the average one. As the case progresses the standard should be departed from in the direction of increase or diminution, according to the individual needs. To our thinking it should approximate in character that of Ebstein rather than that of Harvey,—i.e., there should be only a moderate reduction of the fats and hydrocarbons below the norm, and only a moderate increase of the nitrogenous food. For the purpose of aiding our readers in arranging a diet list we append the following table, originally compiled by Dr. Zahn, which gives approximately the amount of food material in various common articles of diet :

Food.	Water.	Albumen.	Fat.	Carbohydrates.
Mean of ten different kinds of simple soup.....	91.	1.1	1.5	5.7
“ ten rich soups.....	83.2	2.6	3.2	9.7
Boiled beef, lean, from young heifer.....	66.5	28.4	1.3	
“ fat, “ “	49.	38.	12.1	
Beef, steers, and oxen, boiled.....	56.8	34.2	7.5	0.4
“ “ “ “ roasted.....	59.	38.2	1.7	
Roast meats, including beefsteak, game, birds, etc., reckoned as an average.....	58.	38.2	2.7	
Veal, roasted.....	78.	15.3	5.2	
Fricassee veal, with fat and milk.....	57.	22.3	10.4	10.
Fat roasted pork or goose.....	40.	34.6	24.2	
Smoked ham.....	59.73	25.08	8.11	
Boiled fish.....	74.20	22.10	0.60	0.70
Shell-fish.....	80.97	17.09	0.34	
Mean of seven different kinds of meat-foods.....	44.20	8.70	15.	28.9
Potatoes, roasted.....	72.40	1.90	3.30	21.20
“ as salad.....	73.	2.10	3.20	21.80
“ boiled.....	70.	1.80	3.10	24.
Salad, green.....	94.2	1.40	2.	2.2

Food.	Water.	Albumen.	Fat.	Carbohydrates.
*Vegetables in general, average.....	62.2	6.40	1.40	30.
White bread.....	40.45	6.15	0.44	51.12
Black bread.....	31.	11.	.....	57.
Dried fruit.....	1.18	13.31	3.18	81.08
Milk.....	87.42	3.41	3.65	4.81
Cream.....	65.51	3.61	26.75	3.52
Buttermilk.....	90.27	4.06	0.93	3.73
Butter.....	14.49	0.71	83.27	0.58
Cream cheese.....	35.50	17.44	40.80	5.21
Lard.....	0.70	0.26	99.04	.....
Sugar.....	2.16	0.35	.....	96.32
Vinegar.....	94.	.....	.....	0.4
One egg, estimated not by percentage, but amount in average egg.....	8.25 3	1.4 3	1.35 3	0.05 3
Tea.....	97.9	0.3	.....	0.6
Coffee.....	94.7	0.18	0.52	1.4
“ with milk.....	93.3	1.60	2.20	1.6
Chocolate with milk.....	89.	3.7	3.6	3.8

* Vegetables exclusively American, such as tomatoes and green corn, are not included in this analysis.

The question of the water allowance is a serious one. The chief hardship of the dieting is, to many Americans at least, the withdrawal of the water-supply, and patients continually ask whether water makes fat. So far as our present chemical knowledge goes, water does not make fat. Indeed, we have never seen a reason given, which to our own mind was satisfactory, for the abstinence from water-drinking that is so much insisted upon in all the modern systems of fat-reducing. The explanation offered by German writers is that by causing an increased blood-volume the water dilates the small capillaries and thereby facilitates the change of food-fat into body-fat. Whatever may be thought of this as science, the concord of practice is not to be forgotten, and, whilst the extreme measures in regard to the water ration seem unnecessary, it is probably in many cases essential to moderate the daily allowance.

When the symptoms of disturbance of the circulation are very great, and especially when the excessive drinking of beer or other liquid has caused a great excess in the bulk of blood in the body, abstinence from fluids may be imperative in order that the volume of the blood may be reduced and the strain upon the circulation lessened. In Professor Oertel's case the state of affairs just spoken of seems to have existed, and it is almost inevitable that he should magnify the importance of the dryness.

The choice of the form of exercise to be used in the treatment of a corpulent patient ought to largely depend upon the circumstances of the individual case. Two factors should never be lost sight of: first, the exercise should really be severe enough to be effective; secondly, it should be as little irk-

some as possible. There can be no disputing the severity and the effectiveness of mount-climbing as prescribed by Professor Oertel, and in Europe, with its great central mountain playground, mount-climbing is in a large majority of cases very practical. At first the patient may ascend the same slope day after day, each time going a little higher, but as "the cure" progresses different excursions should be made to add interest to labor. In America high attractive mountains are not so accessible as in Europe, and as we cannot believe that any one form of exercise has any specific or peculiar virtue, other work may be well substituted. Wood-sawing is largely employed in some European anti-fat sanitariums, and is undoubtedly efficient. Regulated severe gymnastic work is available in many cases. A form of foot-exercise whose fat-destroying value every trainer is familiar with is running. The influence which it has upon heart and lungs does not differ from that of mountain-climbing, and if there be any truth in the teachings of Oertel, as to the value of pulmonic and cardiac gymnastics, running ought to be of especial value when the heart or lungs are giving evidences of being especially affected by the fat-accumulation. Boat-rowing or even canoeing may serve the purpose of the fat man.

It seems to us, however, right here to give an especial caution in regard to any of these violent exercises,—namely, that at first they should be practised very carefully. They are of no use unless thoroughly performed, but may be taken slowly. The mountain-climber or the runner should at first stop every few feet, to allow heart and lungs to recover themselves. Moreover, in cases like that of Professor Oertel, in which the heart-symptoms are

severe, the physician must be very sure that the heart is not in a state of true fatty degeneration, but of fatty overloading,—*i.e.*, of what may be well termed fatty oppression. In a doubtful case the utmost caution must be exercised.

In directing the life of a corpulent patient the physician should always look after the details, such as bathing and clothing. The bath should always follow the exercise. Unless the latter is severe enough to cause free sweating it rarely will accomplish anything, and not only for cleanliness, but also for the purpose of keeping the skin healthy, washing is essential. The temperature of the water should be low, unless in very feeble patients or where the heart-failure is such as to create fear of shock. When the patient's means allow it, a half-hour's massage after the bath will not only be agreeable, but helpful. During exercise clothing should be sufficient to aid in sweating, but not oppressive. It is always necessary to guard against the possibility of taking cold during the exhaustion which at first may follow the exercise, but especially should patients who select mountain work be cautioned to protect themselves against the sudden weather changes which occur almost daily in such regions.

"A cure" which the writer can especially recommend to robust men who are fearing rather than suffering from excessive corpulence is a tour in the Rocky Mountains or in the wilderness of New Mexico or of Texas. If the expedition is arranged to be out six weeks, so that the only food carried can be flour, coffee, and salt-pork, and the daily horseback march or hunt is up to the full limit of equine and human endurance, there will be no need of a scientifically controlled dietary. The writer's experience in the Texan deserts—where the thermometer sometimes reaches 110° F. at midnight, water to be found only once in thirty-six hours, and shade at no time—leads him to especially commend it to the searcher after leanness who can stand the heat. More agreeable and scarcely less effective are the opportunities afforded in the higher and more northern table-lands and mountains of the Rocky Mountain region. Even in this cool atmosphere the writer has found that, although at first it may be a labor to climb upon the steed, at the end of six weeks of journeying the joints are loosened and an agility attained worthy of a cow-boy. The daily labor of travelling in a canoe in a wilderness such as that of Maine, the long hours of paddling or of rowing, the assistance to the

guides in camp-making, are in many cases sufficient to reduce the over-stout man to a better condition; and if he will shoulder his loads at portages manfully, carrying packs of forty or fifty pounds through swamp or forest, up-hill and down-hill for some hours daily, he will find little need to haunt sanitariums, but will soon gain back from nature that strength and freshness which, perchance, he has lost by unnatural eating, drinking, and physical indolence.

STENOCARPINE, THE NEW LOCAL ANÆSTHETIC.

THE evidence to which we referred in our August number as to the anæsthetic properties of the substance which is termed by Dr. Seward *Stenocarpine* has been confirmed by experiments made by Dr. Hermann Knapp (*Medical Record*, August 13, 1887) and Dr. Edward Jackson (*Medical News*, September 3, 1887).

Dr. Knapp's experiments as to the physiological action of this substance on the eye seem to prove that it produces anæsthesia of the cornea and conjunctiva in the same way and fully as energetically as a cocaine solution of equal strength. The conjunctiva becomes bleached and the seat of an unpleasant feeling of dryness, which sets in with the anæsthesia and lasts the whole day, while the pupil commences to dilate in from eight to twelve minutes, reaches its maximum, that of the utmost atropine dilatation, in twenty minutes, remains in this condition the whole day, and disappears, as a rule, on the fourth day. Accommodation likewise commences to diminish within ten minutes, and is completely paralyzed in twenty to twenty-five minutes, the tension of the eyeball being but slightly diminished, while the interior and mobility of the eye and the lustre of the cornea are unchanged. Dr. Jackson likewise found that instillation of one drop of a two per cent. solution of the drug caused slight smarting, followed by dryness of the conjunctiva and widening of the palpebral fissure; and within two and one-half minutes complete anæsthesia of the conjunctiva and cornea, the anæsthesia lasting for about twenty minutes. These results were obtained in sixteen different individuals, in all complete anæsthesia being attained in one or two minutes, and passing off mostly within half an hour.

It would also appear that it produces a wider dilatation of the pupil than other mydriatics.

Applied to the mucous membrane of the nose, throat, urethra, and glans penis and rectum, anæsthesia was readily produced to an equal if not more marked degree than can be obtained by the employment of a solution of cocaine of equal strength, while when applied to the throat or nose the senses of taste and smell are respectively suspended. Applied to the skin externally, Dr. Jackson states that it caused complete anæsthesia, his method being to simply moisten the surface and keep it continually moist with the solution, when, after about ten minutes, a needle might be plunged into the skin without the slightest sensation. In this respect Dr. Jackson's results are antagonistic to those of Dr. Knapp, who found that in five different cases external application to the healthy skin gave uniformly negative results. Dr. Jackson explains this discrepancy by attributing an extremely superficial action to the drug, and he states that it is only the external layers of integument which are anæsthetized, and if the point of a needle be plunged somewhat deeper it may be readily felt to pass from the anæsthetized layer into one in which it causes the usual amount of pain.

Dr. Jackson claims that to render this remedy applicable for producing painless operations on the healthy skin the incisions must pass but gradually through the skin, and that as each layer is divided the wound must be freshly moistened with the solution. In this way he claims to have succeeded in operating without producing any painful incisions.

As regards the toxicological action of this remedy when given in large doses, the nature of the symptoms of poisoning which it produces does not appear to be as yet clearly established. Thus Dr. Knapp states that its action is analogous to strychnine, five minims injected into a large rabbit causing violent tetanic convulsions, the pupils dilated, respiration and pulse accelerated; while Dr. Jackson, on the other hand, describes stenocarpine as a depresso-motor poison, and in no case in his experiments does he refer to the production of convulsions. In both cases, however, it appears that death is not produced through the action on the organs of circulation, since the heart continues to beat after entire cessation of respiration. It is evident that this part of the subject requires considerable revision.

As far as can be yet determined, the physiological action of this substance appears to be closely similar to that of cocaine, and would

suggest the similarity of action to that which might be possessed by a solution of cocaine containing one of the strong mydriatics, such as duboisine or hyoscyamine. For while cocaine has but little power of paralyzing the accommodation, and its action on the pupil may be overcome by one-fiftieth of its weight of eserine, stenocarpine requires two-thirds or four-fifths of the myotic to overcome it; and if, as evidence seems to indicate, it is as a local anæsthetic more powerful than cocaine, and as a mydriatic more powerful than homatropine, its future is a very promising one.

Unfortunately, the botanical origin of this drug is as yet unestablished, and the name stenocarpine therefore entirely unwarranted, as both Dr. Jackson and Dr. Knapp obtained their specimens from Dr. Seward, whose manufacture was also used in the experiments of Dr. Claiborne.

Dr. Jackson states that in Professor Charles S. Sargent's "Report on the Forests of North America" no such tree as the *Acacia stenocarpa* is mentioned, and although our inclinations would lead us to a warm reception of stenocarpine, our judgment leads us to hold our opinions in reserve until the source of the drug is clearly established, and until some other chemist succeeds in isolating an alkaloid with similar properties.

By this statement we do not wish to reflect on the methods or results of the gentlemen who have already experimented with this remedy; but we do not have to go into very ancient history to find an illustration of claims of a precisely similar nature which further experience proved to be entirely unwarranted, and attended only by the gravest disappointment.

Since writing the above Dr. J. H. Claiborne has announced in the *Medical Record* for October 1, 1887, that the substance termed stenocarpine is obtained from the *Gleditsia triacanthus*, and he therefore suggests the name of *gleditschine*. The methods of extraction of the alkaloid, if such it be, are not given.

VERATRUM VIRIDE IN THE TREATMENT OF PUERPERAL ECLAMPSIA.

ATTENTION has recently been called to the value of veratrum viride in the treatment of puerperal eclampsia. Dr. Ira E. Oatman, Sacramento, Cal., in a suggestive paper read before the Section on Obstetrics, Ninth International Medical Congress, says the remedy is "safe, speedy, reliable, and

permanent in its action." After controlling the convulsions by chloroform, morphine, chloral, and the bromides, and the evacuation of the uterine contents at the earliest possible period, he exhibits 8 drops of the saturated tincture *per os*, or 15 drops *per rectum*,—the dose to be repeated every fifteen or twenty minutes until the frequency of the pulse is reduced to forty beats per minute. When used hypodermically, he is of the opinion that the excessive action of the drug is less under control. At the same time the drug is administered it is well to have alcoholic stimulants at hand, although Dr. Oatman has never observed any toxic effects. He records a case of a man recovering after a dose of 120 drops of the saturated tincture, and of a child, 4 months old, after a dose of 52 drops.

At the twelfth annual meeting of the American Gynecological Society Dr. Charles Jewett, Brooklyn, read a paper, entitled "A Note on the Treatment of Puerperal Eclampsia," in which he recommends the use of *veratrum viride* hypodermically in doses of from 10 to 20 minims, repeated at the expiration of half an hour if the pulse does not diminish in frequency. "No convulsion can occur while the patient is under the influence of *veratrum viride*, and the pulse below sixty per minute." Dr. Jewett does not advise the use of the drug to the exclusion of all other remedial procedures.

The exhibition of *veratrum viride* in the treatment of puerperal eclampsia is by no means a new use of the drug. Fearn,* Boyd,† and Kenyon‡ have reported cases of puerperal convulsions in which *veratrum viride* was successfully employed. The evidence from clinical observation up to the present time, however, has been insufficient to establish the remedy in professional confidence, and we find no reference to the drug in the more recent European treatises on obstetrics.

A strong *à priori* argument in favor of this use of *veratrum viride* may be drawn from a brief consideration of the pathology of eclampsia and the physiological action of the drug. The very large majority of obstetricians will give assent to the proposition§ that puerperal eclampsia is a symptom of urinary resorption, conditioned upon functional or organic disease of the kidneys or mechanical

obstruction of the ureters,||—flexion, infraction, or stretching. The nerve-centres are poisoned by the retained urine, and increased reflex irritability results. The experiments of Kussmaul and Tenner render in a high degree probable the theory that the immediate cause of the convulsions, as in the case of epilepsy, is acute cerebral anæmia, the result of spasm of the arteries conveying blood to the brain. The convulsions and coma constitute a reflex vaso-motor neurosis. The peripheral irritant is very frequently uterine contractions.

Now, what is the physiological action of the remedy under consideration?

The numerous and exact researches of H. C. Wood have demonstrated that American hellebore is a powerful spinal and arterial depressant. "In full therapeutic doses," says Wood,¶ "it lowers the pulse-rate both by a direct action on the muscle (*jervia*) and by stimulating the inhibitory nerves (*veratroidia*); it diminishes the force of the heart-beat by a direct influence on the cardiac muscle (*jervia*), and produces a general vaso-motor paralysis (*jervia*) more or less complete according to the size of the dose." When a woman with puerperal eclampsia is under the influence of *veratrum viride* she is literally "bled into her own veins," while at the same time the activity of the spinal centres is also depressed.

Although a powerful remedy, American hellebore, as remarked by Wood, is probably the safest of all cardiac depressants. In the event of alarming symptoms resulting from the drug, it is a clinical fact that alcoholic stimulants are usually rapidly effective in the restoration of the functions of respiration and circulation.

In the light of the evidence now in our possession collected from clinical observation and experimental research, the drug is eminently worthy of further trial in the fulfilment of the indication just mentioned. While the remedy can have little or no effect upon the ultimate cause of puerperal eclampsia, and therefore ought never to be relied upon to the exclusion of other measures (the evacuation of the contents of the uterine cavity in particular), it is probably of very great value in maintaining the effect produced by chloroform, morphine, chloral, and the bromides.

The most eligible form for exhibition is

* American Journal of Obstetrics, 1871.

† American Practitioner, 1878.

‡ New York Medical Journal, 1879.

§ Paul F. Weifel, "Lehrb. d. Geburtshilfe," 1887, p. 474.

|| Joseph Kucher, "Puerperal Convalescence," etc., 1886, p. 139.

¶ Therapeutics, Materia Medica, and Toxicology, 1887, p. 175.

probably the fluid extract in doses of 3 drops. Norwood's tincture, a saturated spiritus, is more usually employed.

As a memento that the year is coming to an end, we have received from the well-known publishers, E. Blakiston, Son & Co., a copy of their visiting-list for 1888. As this is the thirty-seventh year of this publication, any extended notice of it would be of course superfluous. All the essential features seem to be reserved without much change.

C. E. DODSLEY affirms that the addition of four drops of the oil of sassafras to the ounce of iodoform completely does away with the disagreeable odor. This is certainly important, if true.

Reports on Therapeutic Progress.

TREATMENT OF FIBROID TUMORS OF THE UTERUS BY ELECTRICITY.

An interesting communication was made by DR. APOSTOLI (Paris) before the Section in Obstetric Medicine at the recent meeting of the British Medical Association (*Lancet*, August 13, 1887), with observations and complete statistics of all the cases so treated from July, 1882, to July, 1887, followed by a practical demonstration in the Rotunda Hospital by Dr. Apostoli himself. Owing to his inability to speak English, Dr. Apostoli's paper, which had been translated by his friend, Dr. Woodham Webb, was read by Dr. W. Duncan, one of the secretaries of the Obstetric Section. In this communication Dr. Apostoli says it is five years since he adopted a proceeding which he defines as a galvano-chemical cauterization of the uterus, vaginal, intra-uterine, or parenchymatous, and always monopolar. He points out that all the attempts made by his predecessors in the use of electricity were defective. The current of electricity was employed (1) in a vague and variable manner; (2) without dosage; (3) in a dose insignificant; (4) by a method always extra-uterine; and (5) by a method often dangerous. In 1882 Dr. Apostoli originated his new and rational way of using electricity, which he has since gone on modifying and improving. He claims to have supplanted the old method by a plan which is—1. Precise, by the introduction of new galvanome-

ters of intensity, exact counters and measures of the electric current. 2. Energetic. 3. Tolerable, in spite of the enormity of the doses, owing to the introduction of the wetted-clay electrode, which renders the cutaneous pole innocuous, and permits a current of signal medical intensity being transmitted through it easily and without injury. 4. Better localized. 5. Thoroughly under control. He applies to the diseased uterus a continuous galvanic current of an intensity and duration sufficient to produce the therapeutic effect required. This application is galvano-chemical cauterization. 6. More scientifically exact. The positive pole is hæmostatic—anti-hæmorrhagic—in its action, sometimes instantly, or, again, gradually; it is the remedy, *par excellence*, in bleeding myomas; on the other hand, with the negative pole we obtain a state of temporary congestion, without direct hæmostatic effect. It will render benefit in fibroids accompanied with amenorrhœa and dysmenorrhœa. He believes his method is—1. Easy of application. 2. Simple. It is a skilful uterine therapeutic soundage. It needs a good galvanometer of intensity, a battery capable of yielding an adequate current of electricity, an offensive cutaneous electrode in wet potter's earth, an inattackable intra-uterine electrode in platinum, and a steel trocar for the galvano-punctures. 3. The current is mathematically dosable. 4. The seat of operation is optional. 5. It is of easy control. 6. It is antiseptic. 7. It is easily borne, as a rule. 8. It does not impose on the patients any forced exclusion. The positive pole is the remedy for bleeding, the negative for non-bleeding fibroids; but, further, if the negative pole is made *by puncture* to enter into the substance of the fibroid, it will insure its diminution, and further, by a sort of *contre-coup*, will exert a hæmostatic action. Hence Dr. Apostoli gives these rules. Pole positive intra-uterine for the restraining of hemorrhage; pole negative intra-uterine for non-bleeding tumors; while the indications for galvano-puncture are twofold,—(1) as a matter of necessity, owing to uterine atresia, or where a sound, owing to displacement of the uterus, cannot be introduced; (2) by preference, if the punctures can be combined with intra-uterine cauterizations, so that one can expedite and make sure of effects which, with the cauterizations only, would be slower and more imperfect. Dr. Apostoli gives the following directions for galvano-puncture: 1. Antiseptic vaginal irrigation before and after each operation. 2. The puncturing instru-

ment should be a small steel trocar or needle, and the punctures should be shallow, not deeper than one to two centimetres. 3. The puncture should be made in the most prominent part of the fibroid, if possible in the posterior cul-de-sac. 4. No speculum should be used. 5. The seat of any pulsation should be ascertained, so as to avoid wounding any vessels. 6. If there is any unusual hemorrhage the vagina should be dilated with an expanding speculum, and, if necessary, pressure forceps should be put on the bleeding point. Dr. Apostoli claims that, as a result of this plan, every fibroid tumor will undergo a reduction appreciable by touch, and demonstrable by internal measurement. The reduction of the size of a tumor is generally associated with an accumulation of subcutaneous adipose tissue on the abdominal walls. Further, the regression of the tumor goes on after treatment has been suspended, it becomes liberated from its local attachments, and it tends to become more sub-peritoneal and pediculated. Again, from a clinical point of view, Dr. Apostoli asserts the results are not less striking. He says that ninety-five times out of a hundred all the miseries constituting the fibroidal condition are suppressed, such as hemorrhages, the troubles of menstruation, dysmenorrhœa, amenorrhœa, nervous disturbances, the direct pains in the growth itself, and from mechanical pressure and the harassing series of reflex actions. Dr. Apostoli has, in the five years from July, 1882, to July, 1887, made, either privately or at his clinique, as many as five thousand two hundred and one applications of continuous galvanic currents for most of the maladies included in the gynæcological nosology, which he thus enumerates in the following order: (1) Fibroids of the uterus,—polypi; (2) entire or partial hypertrophies of the uterus; (3) subinvolutions; (4) acute and chronic metritis and endometritis; (5) ulcerations of the neck of the uterus; (6) perituterine inflammations (perimetritis, parametritis, cellulitis, phlegmons); (7) ovarialgia; (8) ovaritis and periovaritis; (9) salpingitis; (10) ovarian and tubular cysts at an early age; (11) atresia; (12) hæmatocele. These five thousand two hundred and one operations (during a period of five years) were made upon four hundred and three patients. Of these he lost only two; in one he says he did not recognize the existence of a suppurating ovarian cyst which ended in death from peritonitis, in the other death was due to a puncture made too deeply. From July, 1882, to July, 1887, he has had under his care two hun-

dred and seventy-eight patients with fibroids or hypertrophy of the uterus in some manifest degree, upon whom he has used four thousand two hundred and forty-six applications of the continued current of electricity. He does not wish to convey the impression that all have been cured, but he affirms that when there has been no negligence, and where his advice has been fully acted on, ninety-five times out of one hundred permanent benefit has been acknowledged. Among the patients who had not the will to let Dr. Apostoli finish what he had begun, and whose impatience led them voluntarily to seek removal of their tumors by excision, seven put themselves into the hands of six most eminent surgeons, and not one recovered from the operation. It is of great importance that this new method of treatment should be brought before the notice of the profession, and hence a full *résumé* of Dr. Apostoli's paper is given.

EXPERIMENTS WITH ANTIFEBRIN.

According to the Vienna correspondent of the *Medical Press*, July 27, 1887, Dr. WEINSTEIN summarizes the results which he had obtained in his experiments with "antifebrin" in the clinics of the General Hospital in the following way: 1. As an antipyretic from $\frac{3}{8}$ to $\frac{1}{4}$ gramme dose is sufficient to lower the high temperature by three degrees after the lapse of from two to four hours. Antifebrin may be administered in daily doses of from 1 to 2 grammes. 2. The transition of the high temperature to the lower, and *vice versa*, is a gradual one. The apyrexia usually lasts for some hours, sometimes from twelve to sixteen. 3. No bad consequences supervene when the drug is administered with precaution. After large doses, such as 0.25 or 0.50 gramme, have been administered at one time, great perspiration, and occasionally also shivering or cyanosis, used to occur. Hyperpyrexia and collapses hardly ever supervened. 4. The blood-pressure first shows a tendency to increase, but is no longer influenced when the antifebrin has been administered for a longer interval of time. The rigidity of the blood-vessels increases slightly. 5. The best results were obtained with antifebrin in cases of erysipelas, puerperal process, and intermittent fever. The swelling of the spleen decreased. Dr. Weinstein remarks that antifebrin is best fitted for regulating the temperature, for producing a gradual decrease of the abnormal warmth of the blood, so that no

collapse may occur. He advises its administration in doses of from $\frac{1}{8}$ to $\frac{1}{4}$ of a gramme, from three to four times a day. The temperature must be measured twice daily, and the drug is to be administered only when the temperature has reached 40° C. and over. A decrease of 2° C. is sufficient. The administration of the antifebrin as an antirheumatic is to be recommended in acute cases, in doses of $\frac{1}{4}$ of a gramme at each two hours, and of from 1 to $1\frac{1}{2}$ grammes daily. The antifebrin may be administered in the same doses as a "nervinum," but only with a palliative effect.

THE INDICATIONS AND RATIONALE IN
WASHING OUT THE PUERPERAL
UTERUS.

DR. J. HALLIDAY CROOM recently read a paper before the Edinburgh Obstetrical Society in which he formulates the circumstances under which the antiseptic washing out of the uterine cavity is indicated (*Obstetric Gazette*, August, 1887).

Indications.—1. Where, with localized tenderness over the uterus, there is a high pulse and temperature, and a fetid discharge. It is to be observed that the discharge must be fetid *from the uterus*. In order to decide this question, it is essential to wash out the vagina with an antiseptic wash,—inodorous, such as corrosive sublimate,—and then putting the finger up and into the cervix, to decide whether it is fetid or not. As the author points out in the sequel, all first washings out should be performed under chloroform, therefore he always explores the cavity of the uterus with the finger. No reference need here be made as to the ease with which this can be performed, at least during the first week of the puerperium. Even at a long period after labor, the carbolized fingers can be comparatively easily introduced. In most cases some morbid product will be found, and in all cases the necessary dilatation of the cervix will much facilitate the process of washing out.

2. Where, with a high pulse and temperature, there is any question as to the absolute complete delivery of the placenta; and, in this connection, it is impossible to emphasize too strongly the importance of examining closely the placenta after delivery, whether it be expressed, extracted, or delivered spontaneously. Such care will often eliminate at once any possible cause of infection.

3. Where portions of membrane have been retained *in utero*, and give rise to increase in pulse and temperature. Here, however, it

should be noticed that it is possible to do harm in endeavoring to remove the membranes completely at the time of delivery. It is much better to leave a portion of membrane than to open up the genital canal in search for a small piece.

4. After the birth of a putrid foetus.

5. Where the uterus remains abnormally large after labor, and where, as a result, owing to the presence of decomposing clot, symptoms of septic infection develop themselves. In such cases, washing out ought to be accompanied by the introduction of the finger within the uterus, and in all such cases quinine ought to be administered in large doses.

6. In cases where, late on in the puerperium, symptoms of septicæmia develop themselves.

7. In those somewhat rare, but well-recognized cases, where, from acute flexion of the uterus, the lochia are retained and decompose.

8. In some cases of imperfect abortion and premature labor, and in all cases where the uterus, under such circumstances, has been curetted.

9. In all cases where the hand has been introduced—say in cases of post-partum hemorrhage, adherent placenta, or uterine hydatids—washing out the uterus with hot antiseptic water is the recognized treatment.

Rationale.—"What is the rationale," the author next asks, "of washing out the puerperal uterus in septicæmia?" It seems, at first sight, open to doubt how far washing out the uterine cavity can prove effective in checking septicæmia if rapidly-multiplying microbes have already passed into the system.

BALDNESS; WHAT CAN WE DO FOR IT?

The above was the title of a paper read by DR. G. T. JACKSON before the Medical Society of the County of New York at a recent meeting (*N. Y. Med. Journ.*, August 6, 1887). Alopecia præmatura alone received attention. Premature baldness, it might be said in a general way, was that occurring before the forty-fifth year, although the period was arbitrary. Subdivisions were made into idiopathic and symptomatic. The idiopathic form began unannounced by any antecedent disease. Many families had it for generations. The different causes alleged for it were named, but the author gave particular attention to the influence exerted by want of

proper care of the hair, as this was under the control of the patient, and was a part of prophylaxis and treatment. He was inclined to think that due attention to proper care of the scalp and general hygiene of the body were more reliable than any so-called remedies. Women gave more care to their scalps, and not only was baldness less common among them than among men, but the results of treatment were better. In families in which baldness was hereditary, prophylaxis should commence at birth with proper cleansing of the scalp, the use of soap and water, the brush and comb, and the avoidance of all things which might injure the scalp. The shampoo need not be repeated more than once or twice a week, and after drying some unguent, such as sweet oil, should be applied. What not to do was nearly as important as what to do. Pomades, as they were liable to become rancid and injure the scalp, should not be used. Wetting, twisting, pulling, and scorching the hair, as fashion demanded, were injurious. Close-fitting hats and caps should not be worn. Anxiety of mind should be combated by cultivating a cheerful disposition. Baldness due to dandruff, syphilis, typhoid fever, etc., next received attention. In addition to treatment appropriate to the special disease, the author again urged the importance of systematic care of the scalp and hair.

*A READY METHOD FOR REMOVING
FOREIGN BODIES FROM THE
ANTERIOR NARES.*

Physicians are often called upon to remove peas, buttons, and various substances from the nostrils of children who have themselves introduced them there. A ready method for removing such substances is described by Mr. T. OSBORNE-WALKER in the *Lancet* for September 17, 1887, where he states that recently a little boy was brought under his care with a button tightly impacted in the angle between the vomer and os nasi at the bridge in the right nostril. Ineffectual attempts at extraction had evidently been made, as shown by blood oozing from the nostril, and some, coagulated, adherent to the button, partially concealing its outlines from view, and also by the button being fixedly jammed in. In such cases, to prevent struggles and interruption, the child's arms, hands, and legs should be first confined, by folding tightly round these and the body a long, clean apron, and then placing the child on an attendant's lap, facing

a window, while the operator stands behind the patient, and, bending over and depressing with two fingers of the left hand the apex of the nose, to admit as much light as possible upon the object to be removed, with the right hand very carefully, to avoid its descent into the pharynx or larynx, the spoon end (with the concavity directed forward) of an ordinary pocket-case director should be introduced, with which at once with a simple lever movement or jerk the foreign body may be readily ejected.

By attention to the following points the removal is instantaneously effected: The close confinement of the hands, arms, and legs by a shawl, blanket, or apron; a good light; a reliable person to securely hold the child; the position of the operator behind the patient; depressing well the apex of the nose to obtain a good view of the object; and, lastly, getting the concave face of the spoon of a director fairly behind the body before making the forward lever movement.

*THE HYDRATE OF TURPINA IN THE
TREATMENT OF CATARRHS
AND BRONCHITIS.*

In the *Medical Record* for September 24, 1887, Dr. HALSTED BOYLAND calls attention to the use of hydrate of turpina, an alkaloid which has recently been discovered in turpentine. This substance consists of round, rhomboidal, and polygonal crystals, presenting much the same appearance as those of hydrate of chloral. Dr. Boyland administered it in a number of cases in the form of a mixture, finding that when given in pill form it was apt to cause disturbance of the stomach.

The following is his formula:

R Hydrate of turpina, gr. xxiv;
Glycerin, C. P., q. s. ut f. solutio;
Syrup of lactucarium, ad ℥i. M.

Sig.—Give 1 teaspoonful every three hours.

The employment of this remedy in the treatment of chronic catarrh causes loosening of the cough, renders the expectoration free and easy, the skin becomes soft, moist, and natural, and the bronchial râles diminish.

According to Dr. Boyland, there is not the slightest taste or odor of turpentine about this alkaloid. Taken in doses of 10 grains it produces in some patients a sense of fullness in the epigastrium and slight cerebral hyperæmia, accompanied by a feeling of stimulation. These symptoms disappear as the drug is withdrawn. 15 grains is a maximum dose.

HYDROCHLORATE OF APOMORPHINE.

This useful salt has been extensively tried by DR. STOCQUART, of Brussels, as a remedy for certain kinds of cough, and he speaks highly of its value. The kind of cough in which it has proved most successful is a distressing and frequent hacking unattended with expectoration, or with exceedingly difficult expectoration, and the improvement of the patient's condition is usually effected in a few days. The drug is, as a rule, well borne, although a few individuals manifest a special susceptibility to its action, and rarely nausea, colic, and diarrhoea result from its employment. The dose is a minute one, only 3 or 4 milligrammes of this alkaloid being given in water in the twenty-four hours; and, as the solution rapidly alters by keeping, it is advised to prevent its decomposition by the addition of a few drops of hydrochloric acid, which does not interfere with the therapeutic effects.—*The Lancet*, September 3, 1887.

A SIMPLE METHOD OF APPLYING FLUIDS TO THE NASAL CAVITY.

The general impression among the profession is that nasal douches are not only hurtful from the fact that possibly the fluid enters the Eustachian tube and there sets up inflammation of the middle ear, but it would also seem that the fluid itself in contact with the nasal mucous membrane may prove harmful. DR. CHARLES W. DULLES, in the *Medical and Surgical Reporter* for August 6, 1887, describes a simple plan for applying fluids to the nasal cavity, which is to be recommended on account of its feasibility, although we do not wish to be understood as recommending the method, when so many other appliances, such as the use of sprays, etc., are less open to objections. "Take a test-tube about four inches long and half an inch wide and place in it the solution to be used. Open the mouth and breathe through it. Put the open end of the tube into one nostril, catching the rim against the ala so as to make a good fit. Then bend the head back, and raise the closed end of the tube, so as to *pour* the fluid into the nostril. All the while keep breathing through the mouth. The fluid will now run into the nose, pass back to the naso-pharynx, and can be made to go around behind the septum and on top of the soft palate, and come out of the opposite nostril. By moving the head about in various directions the fluid can be made to reach any point in the nares, in front or behind, and to

remain in contact with it as long as may be desired.

"Any one who will try it will be surprised to find how thoroughly and easily this can be done.

"Of course, all fluid applications to the nares must be well warmed and of a proper specific gravity. If, for example, Dobell's solution be warmed to about 100° Fahr. and used in this way, it will be found a most soothing application. The quantity to be used may easily be as much as such a test-tube will contain. And it may be filled several times and used again and again at a single sitting."

TREATMENT OF SCARLET FEVER.

It would be interesting if a census were to be taken with a view to ascertain what treatment of scarlet fever was most in vogue among practitioners of to-day. We suspect that not an inconsiderable portion of this vote would fall to the lot of expectancy, by which must be understood the absence of any attempt to arrest the course of the malady, combined with great watchfulness of the symptoms and the treatment of the most dangerous of these morbid phenomena. The present epidemic (in London) is for the most part of a mild nature, but considerable attention has to be given to the throat, which seems to suffer in a marked degree, the glandular swelling being correspondingly marked. Hence it will be found that gargles of all kinds, and especially those of an antiseptic nature, are freely used, together with compresses of various degrees of heat and moisture applied to the neck. Most practitioners, even those of the most expectant schools, employ topical applications to the throat and nose. Many articles are used to relieve the thirst and sensation of dryness, but nothing is more effective than ice and a little raspberry vinegar. It is important to keep the nostrils and nasal passages sweet and clean. For cerebral symptoms, nothing is better than the application of cold, either in the mild form of lint soaked in iced water and applied to the shaven head, or in the more effective capilline tubes, with irrigation. Compression of the carotid arteries and bleeding are seldom practised nowadays, either in scarlet or any other fever. Aconite in minute doses, frequently repeated, is still the favorite drug of many practitioners, but its employment needs the exercise of clinical discretion, especially in children. Actual bathing in cool or tepid water is practised by but few physicians, though the number of practi-

tioners who recommend the use of cold or tepid sponging, the patient lying in bed on a mackintosh, appears to be largely on the increase. Most of the alleged specific and curative agents have long since lapsed into discredit. Belladonna finds but few adherents, and carbonate of ammonium almost none. Considerable difference of opinion exists on the merits of inunction with fat, cold cream, and the like, two of the most recent authors on the diseases of children taking opposite views, Dr. Goodhart advocating and Dr. Angel Money opposing the universal inunction, though the latter sees no objection to relieving the tension of the palms and soles by the application of geoline or vaseline scented with eucalyptol.—*The Lancet*, September 3, 1887.

THE THERAPEUTIC INDICATIONS FOR THE USE OF THEINE.

DR. THOMAS J. MAYS has shown that in theine we possess an agent which has the power of paralyzing sensation without affecting motion, and that it does this with a great degree of certainty, and without any appreciable injury to any part of the body, even when administered in large doses. He further shows in the *Polyclinic* for September, 1887, that in order to obtain the full effect of theine it is not necessary to inject it deeper than immediately beneath the skin, when it is exceedingly prompt in exerting its analgesic action. He has injected as much as $2\frac{1}{2}$ grains without experiencing anything but the best results, and he even would not hesitate to go beyond this limit. He has employed it in cases of neuralgia of both lumbo-sacral and cervical brachial surfaces, accompanied by sleeplessness, spasms of the muscles of both legs and those of the left arm. In these cases he gave $2\frac{1}{2}$ grains of theine subcutaneously in four different localities along the spine, which gave instantaneous relief to the pain and the induction of sleep during the following night. This amount was injected daily for twenty-one days in succession, at the end of which time pain had entirely disappeared and the appetite and sleeping greatly improved. In another case, of locomotor ataxia, 3 grains, injected in different spots along the spine, also produced great relief. No prolonged irritation and no inflammation are ever produced at the seat of injection, the slight burning which the injections produce being probably due to the large quantity of water which is required to dissolve this alkaloid.

Dr. Mays has found that benzoate of sodium increases its solubility, and he therefore uses the following formula :

R Theine,
Sodium benzoate, aa ʒi ;
Sodium chloride, gr. viii;
Distilled water, ʒʒi . M.

Sig.—For hypodermic use.

Six minims equal one-half grain of theine.

In the use of theine it must be borne in mind, first of all, that the property of this drug is simply to relieve pain, and while it performs this with perfect satisfaction, it will fail to give permanent relief in obstinate and protracted pain unless the cause of the pathological condition be combated.

THE TREATMENT OF SOME FORMS OF AORTIC DISEASE.

DR. SANSOM (London) gave a valuable address upon the "Treatment of Some Forms of Aortic Disease" before the Section of Pharmacology and Therapeutics at the recent meeting of the British Medical Association (*Lancet*, August 13, 1887). After a few remarks upon mitral disease, in which he said he had come to the conclusion that digitalis was our most efficient remedy in mitral regurgitation and convallaria in mitral stenosis, he gave an analysis of a large number of cases of aortic disease, from which he concluded that the two commonest causes of this form of cardiac affection were (a) rheumatism and (b) atheromatous degeneration. He had found these two causes about equally common. Aortic disease attained its maximum frequency in early adult life. In childhood, according to his observations, the mitral valve was affected in proportion to the aortic as 5 to 1. This accorded with general experience. He proposed to confine his remarks upon treatment strictly to one class of cases,—viz., aortic disease, arising from rheumatism; and he wished it to be distinctly understood that his observations did not refer to any other branch of the subject. He would divide rheumatic cases into two groups,—(a) those in which there were no symptoms referred to the heart, and (b) those cases in which symptoms referable to the heart were present. As regards the former class, patients sometimes sought advice for the most diverse maladies. He related a case of a lad who consulted him for incontinence of urine, and in whom well-marked aortic disease with hypertrophy of the left ventricle was found to be present. In

cases of aortic disease without cardiac symptoms, it might be laid down as an absolute rule that all agents which tended to increase the force of the ventricular systole were absolutely hurtful. Compensation being already perfect, such agents could only serve to disturb the equilibrium. Pain at the heart was an essential and early symptom in aortic disease, while it was well known that pain was not an essential symptom in mitral disease. The pain in aortic disease might attain the intensity of a true angina. Whether hypertrophy or dilatation should be the first to follow disease of the aortic valve was purely a question of nutrition. If nutrition were well maintained, hypertrophy would come first; if nutrition were imperfect, dilatation would precede. As regards the very important question of the administration of digitalis in aortic disease, medical opinion and experience had varied much from time to time. The present tendency was rather in favor of its administration, a view supported by so good an authority as Dr. Oliver, of Newcastle-on-Tyne. While carefully guarding himself against an absolute expression of opinion, Dr. Sansom pointed out certain drawbacks to the use of digitalis,—viz., (1) It may increase the distress and aggravate the symptoms present. In some of his cases where digitalis had had this effect he had seen great relief follow the administration of 5-minim doses of tincture of aconite and the inhalation of nitrite of amyl. (2) Digitalis sometimes caused sickness. (3) In some cases where much temporary relief was obtained by its administration sudden death had followed, apparently as the result of its use. Yet, in spite of these dangers and drawbacks, he believed that digitalis was sometimes of service in the *early* stage of aortic disease and for a *limited* time. If given in the same manner and for the same length of time as was usual in mitral disease, great evil would result.

THE MEDICINAL USES OF THYMOL.

DR. FREDERICK P. HENRY states in the *Medical News* for September 3, 1887, that he has been prescribing thymol in a number of cases of intestinal diseases, catarrhs, acute and chronic, and typhoid fever with satisfactory results, its employment being followed by steady decrease of the temperature, by gradual diminution of the daily number of stools, by the absence of mental excitement, and by

the clean, moist tongue presented in every instance.

The medicinal use of thymol is based upon its well-known antiseptic properties, and its action in the cases under consideration was favored by its great insolubility, which enables it to reach the intestine, mingle with its contents, and neutralize the toxic ptomaines that are formed in great quantity in catarrhs of the gastro-intestinal tract. In the opinion of many authorities, it is to the absorption of large quantities of these toxic products of fermentation and putrefaction that the so-called typhoid symptoms are largely due. These opinions do not rest solely upon theory, for it is found that, during the administration of thymol, phenol, which is one of the most constant products of intestinal putrefaction, and is almost entirely eliminated with the urine, is no longer found in that excretion.

Dr. Henry always prescribes the thymol in pill form, of which the best excipient is medicinal soap; a dose usually is a 2 to 2½ grain pill every six hours, and he thinks that, although this quantity may be increased with safety, the results obtained will be no better. In only one case, in which Dr. Henry's experience coincides with that of several other observers, was digestive disturbance occasioned.

INJECTIONS OF CARBOLIC ACID AND HYPEROSMIC ACID.

No one probably lays claim to a complete knowledge of the pathological changes which give rise to the condition or conditions known as muscular rheumatism, but it may fairly be supposed that they include a hyperæmic state of the perimysium, together with some plastic infiltration and migration of white blood-corpuscles. Now it was shown by Binz that carbolic acid, salicylic acid, and several other substances possess the property of paralyzing and killing leucocytes, and of preventing their migration. This led Dr. EDGAR KURZ, of Florence, some few years ago to employ intramuscular injections of a two per cent. solution of carbolic acid in a few cases of muscular rheumatism. The results were astonishingly satisfactory, and were published in *Memorabilien*, 1882, from which source a notice appeared in many other journals; not, however, always very correct as to the doses employed, grammes having been mistaken for grains,—a misconception which, however important, is often very difficult to avoid, as those who read many foreign medical journals know only too well, simply because abroad

"gr." sometimes stands for grains and sometimes for grammes, and as a gramme is more than fifteen grains, the consequences of a misunderstanding on this point may frequently prove serious. Dr. Kurz introduced from eight to forty syringefuls into the muscular tissue at a sitting, each syringeful consisting of a gramme of the solution. In no case was the urine discolored, or any other sign of toxic action observed; the injections were practically painless, and their anæsthetic effect became apparent in half an hour. Since these observations were published Dr. Kurz has continued to employ this method with excellent results. He has also found it very efficacious in the inflammatory affections of the sheaths of tendons due to injuries, and generally in sprains where the ligaments, tendons, or muscles were affected. Some similar and even more universally successful results have this year been published by PROFESSOR BENEDIKT, of Vienna, from the use of the same solution in affections of the ligaments and tendons, but more especially in acute rheumatism, where it appeared to act similarly to salicylate of sodium, quickly reducing the pain, the swelling, and the pyrexia. The best results were, however, obtained by combining the two methods, particularly at the commencement of the disease giving large doses of salicylate by the mouth and at the same time from one to three injections of carbolic acid daily. A somewhat similar form of treatment has been very successfully employed by DR. STEKOULIS, of Constantinople, in sciatica, an affection due to causes of very various nature, but frequently allied pretty closely with chronic rheumatic affections. The injection he used was a solution of hyperosmic acid, a substance which is in constant request by pathologists for hardening tissues for microscopical purposes. All the ten cases in which this remedy was employed were of considerable standing and very obstinate, Jacoby having recommended its use under such circumstances. A one per cent. solution was used, which, on account of the action of light upon it, was preserved in dark glass bottles. One gramme was injected deeply into the gluteal region close to the nerve, and this was followed by other injections extending along the course of the nerve to the number of something like a dozen. The pain caused by the injections was somewhat severe and burning, but it only lasted one or at most two minutes. At first the injections were repeated daily, afterwards every three or four days. Care was required

never to insert the needle into the same point as before. Out of ten cases, eight were completely and one partially cured, one only remaining unbenefited. No unpleasant effects beyond a slight tenderness over the points where the needle had entered, and which did not last more than a day or two, were observed.—*Lancet*, August 13, 1887.

THE CAUSES AND TREATMENT OF UTERINE DISPLACEMENT.

At the meeting of the Gynæcological Society held in New York DR. THOMAS ADDIS EMMET read a paper with the above title (*Medical Record*, September 24, 1887).

Close observation and a long experience, said the author of the paper, have been of but little avail, if it be true that the version of the uterus is the disease, and if a simple change in the extent of the deviation be the remedy for the displacement.

Moreover, his experience had taught him that the degree of prolapse below, or the elevation of the uterus above, *a certain plane* caused the symptoms now usually attributed to version alone. Years ago he had pointed out what he had termed "the health line," one that varies in each woman, but so long as the uterus occupies it circulation remains normal.

Anteversion of the uterus certainly is not an abnormal position. Retroversion, to a very marked degree, is frequently detected accidentally, not the least inconvenience ever having been produced by it.

The causes of displacements to which he directed special attention were the *external, and due to pelvic inflammations*.

There is a large class of cases which belong under this head, but which have not received the attention that their importance demands.

With a backward or a forward displacement, the only relief to be obtained must be through some means which will correct the prolapse sufficiently to restore the circulation.

When the uterus has been displaced in either direction, as the result of peritoneal inflammation situated on the anterior face of the broad ligaments, any attempt to correct the version will not succeed unless the same principle be kept in view. When the inflammation has been limited to one side, most frequently upon the left, it is equally impossible to devise any pessary which will not make direct pressure, and in time increase the difficulty by exciting a fresh attack of local peritonitis.

The question may be asked, "What is the general practitioner to do with such cases?" His answer would be,—if he is an honest man and considers the future well-being of his patient,—“Let such cases alone, so far as making any attempt to correct the displacement.” If it be absolutely necessary to undertake some mode of treatment, it should be confined to local application of iodine, with cotton and glycerin pads properly placed *to give needed support*, and to the use of hot-water vaginal injections. The treatment of such cases should never be attempted outside of a hospital service, and never would be were the consequences sufficiently understood.

Dr. Emmet then pointed out some of the peculiar features of the pelvic circulation of the female, its close relation to the surrounding fascia and connective tissue.

The whole skill in the successful application of a pessary is to so construct it that, while it relieves the prolapse, it will just dispose of the over-stretch. A pessary does not give relief by simply counteracting version. Its effect is an indirect one, because, when properly fitted, it diminishes congestion by correcting the prolapse and giving tone to the connective tissue of the pelvis. If a uterus, free from peritoneal adhesion, be replaced and a sufficient support to the fascia be again brought into play, it will then be retained in position through the natural elasticity of the surrounding tissues.

HÆMOPTYSIS TREATED BY INJECTIONS OF ERGOTIN.

M. GUELLIOT publishes in a Rheims medical journal some notes of a case in which he injected ergotin into the lung. The patient had been suffering for two years from daily hæmoptyses, which had been treated in various ways, but unsuccessfully. Subcrepitant râles could be heard in considerable numbers three fingers' breadth above the liver in front. The man had had pleurisy twenty-two years previously. His general appearance was good, and no tubercle-bacilli could be detected in the sputum. M. Guelliot determined to try the effect of injections of ergotin in glycerin into the affected region, employing the strictest antiseptic precautions. After a few drops of the solution had been injected the patient brought up sputum of a distinctly sweetish taste, showing that the injected liquid had been absorbed. The injections were continued, the quantity of liquid introduced

being gradually increased. The hæmoptysis began to diminish. The treatment had, after a time, to be stopped, as signs of bronchopneumonia developed. Ultimately the patient died. The base of the right lung was found to be in a state of gray hepatization, and there were pleuritic adhesions round all the lower half; also some tubercles at the apex. The interesting point about the case is the fact that after fifteen or twenty ergotin injections the hæmoptysis diminished in a remarkable degree.—*The Lancet*, September 3, 1887.

THE THERAPEUTIC VALUE OF SOME MEDICINES IN THE TREATMENT OF HEMORRHAGIC CONDITIONS OF THE UTERUS.

At the meeting of the American Gynecological Society, recently held in New York, DR. C. D. PALMER, of Cincinnati, read a paper with the above title (*Medical News*, September 24, 1887).

Referring to the fact that gynecology has assumed a decidedly surgical tendency, he said that too little attention has been paid to the less brilliant medicinal treatment. Uterine hemorrhage can often be treated advantageously by means of drugs, such as ergot, digitalis, cannabis indica, bromide of potassium, arsenic, and gallic acid. Ergot is especially useful in cases of chronic hyperæmia and subinvolution of the uterus, attended by menorrhagia, where the organ is soft and relaxed, and of interstitial and submucous fibroids. Hemorrhages due to fungous endometritis, ovarian and parametric inflammation are not favorably affected. Digitalis is useful in uterine hemorrhage due to cardiac disease.

Cannabis indica is an uncertain drug, acting rather upon the nervous system. Bromide of potassium is a sedative in ovarian irritation and congestion, and thus is useful in certain forms of menorrhagia, as well as in the treatment of hemorrhage from subacute and chronic pelvic peritonitis.

Arsenic acts by improving the general condition, and hence is of value in the menorrhagia of young women and at the climacteric, also in malarial conditions. He gave Fowler's solution in 3-minim doses. Active cathartics often exercise a favorable effect in checking uterine hemorrhage, especially if there is evidence of obstruction to the circulation from habitual constipation. In general, the administration of iron during the intermenstrual period is not advisable, unless the patient is markedly anæmic.

Hydrastis Canadensis has been highly recommended as a hæmostatic in uterine hemorrhage from any cause. Garrigues has obtained good results with *Gossypium herbaceum*, especially in cases of fibroid tumor. *Hamamelis* is inferior to ergot for the relief of sudden hemorrhage, but is useful in the treatment of long-continued flux, where the hemorrhage being of a passive character, the uterus is soft and flabby.

DR. FORDYCE BARKER said that he had found arsenic to be a valuable drug in the treatment of hemorrhages, of excessive flow at the time of the menopause, where vaso-motor irritability was especially prominent. It exerts a direct influence upon anæmia of vaso-motor origin. He is accustomed in treating such cases to administer full doses of the bromides during the time immediately preceding the flow, giving arsenic during the intermenstrual period.

Hydrastis Canadensis is of most value if given after the flow has begun. If there is marked vaso motor irritability he adds five or six minims of the tincture of *nux vomica*. *Viburnum* is a useful drug in menorrhagia and metrorrhagia, where the hemorrhage is of a passive character, especially in early pregnancy and in threatening abortion; it is a valuable uterine sedative.

He agreed with the author as to the importance of relieving the portal circulation, which was accomplished by the use of mercury and saline laxatives. In cases where the uterus was large and flabby, iron and opium should be administered during the intervals between periods.

THE TREATMENT OF GASTRALGIA.

SIR JAMES SAWYER states in the *Lancet* for August 13, 1887, that he has had remarkable success in the treatment of cases of gastralgia by the administration of $\frac{1}{4}$ of a grain of arsenious acid made into a pill, with 2 grains of extract of gentian, twice daily between meals. The use of this remedy must be continued for a few weeks, and, in cases of moderate severity, no other is necessary. The gastralgic pains become less frequent and less severe, and recovery is steadily and surely attained. In the severer cases he uses some form of counter-irritant to the epigastrium, usually employing a rubefacient. In severest cases, vesication by a fly-blister is of service, and the blistered surface should be kept raw for some days by the use of a daily dressing of savin ointment. In addition to

this medical treatment every hygienic adjuvant which tends to raise the strength of the patient is of value in the cure of gastralgia. When there is but little or no gastric catarrh the following dietary may be recommended:

Breakfast: bread and butter or dry toast, with some fresh white fish, or some cold chicken or game, or a mutton-chop, with a breakfastcupful of cocoa or weak tea or coffee. Dinner (1 P.M.): fresh beef or mutton, with bread, potatoes, cooked green vegetables, a fruit tart or a farinaceous pudding, with a glass of light bitter ale. Tea (at 5 P.M.): bread and butter or dry toast, with a small cupful of cocoa, tea, or milk and water. Supper (not later than 9 P.M.): white fish, or some cold chicken or game, or a little cold meat, with bread, and a glass of ale.

THE PUPIL AS A GUIDE IN THE ADMINISTRATION OF CHLOROFORM.

It is always difficult to determine the exact moment at which a patient is sufficiently under the influence of chloroform for an operation to be proceeded with. The sign of conjunctival reflex action, which is usually relied upon, is very variable and often misleading. MR. HENRY J. NELSON formulates the following conclusions as a guide in this respect (*British Medical Journal*, July 30, 1887):

1. The effect produced by chloroform on the pupil is at first dilatation, varying in degree and duration, then contraction as the narcosis becomes profound, and dilatation again when the sensibility is returning. If the administration be still continued, with the pupil strongly contracted and motionless, the pupil will also dilate, but in this case more suddenly and completely, and will be coincident with a state from which it will be difficult or impossible to resuscitate the patient. This latter is the dilatation of asphyxia.

2. So long as the pupil dilates in response to excitation by pinching, etc., the patient is not sufficiently narcotized for the operation to be proceeded with, unless the latter is slight and does not require complete anæsthesia.

3. When the pupil becomes strongly contracted and immobile, no more chloroform should be given until it begins to dilate again. If, then, further anæsthesia be required, a little more chloroform should be given till the pupil again contracts.

4. The occurrence of sickness causes dila-

tation similar to, but more sudden than, that which happens when sensibility is returning, and the efforts of vomiting have the effect of arousing the patient.

The watching of the respiration and the pulse, which are doubtless the best indications of the effect produced on the individual by chloroform, and, therefore, of vital importance for safe administration, does not in many cases furnish evidence of the state of sensibility, in regard to which he holds the observation of the pupil to be of greatest assistance. The sign usually relied on, namely, the insensibility of the conjunctiva, is by no means a satisfactory test, for in many cases conjunctival anæsthesia is established long before the patient can be said to be under the influence of the drug. By observing the pupil, the administrator of chloroform can tell at once when the effect of the drug is on the wane, because the pupil then begins to dilate slowly. Noticing this, he can, by the administration of a few drops more chloroform till the pupil contracts again, prevent the occurrence of struggling and interruption of the operation. In this way he can keep the patient in the state most suitable for the satisfactory performance of the operation without narcotizing him more than is necessary. The amount of chloroform required to maintain a state of anæsthesia is much less than that required to put a patient under its influence several times, and, as it is admittedly a dangerous drug, the less administered the better, especially in operations of long duration. And by allowing the patient partially to recover, one runs the risk of the occurrence of sickness and vomiting, which is always an awkward, and often a dangerous, accident. In the absence of such a guide as the observation of the pupil, the chloroform is likely to be given in a rather haphazard way, dosing the patient till narcosis is profound, perhaps too much so, then interrupting the operation till the danger is averted by arousing him, or waiting until signs of feeling, such as struggles or a cry of pain, give indication for more chloroform.

The observation of the pupil also furnishes a fair indication of the effect produced by chloroform; its size bearing a constant relation to the state of the blood-pressure. In the experiments on dogs the blood-pressure in the carotid artery was recorded on charts, and it was found that contraction only occurred when the pressure had fallen considerably, and, on removal of the chloroform, dilatation only took place when the pressure had risen to a certain height. As reduction

of the blood-pressure was pronounced by the committee of the British Medical Association to be one of the chief dangers in chloroform administration, the presence of a sign by which the occurrence of that important condition can be recognized must be of practical value.

SUTURE OF THE PATELLA.

MR. HECTOR CAMERON (Glasgow) read a paper before the Section in Surgery of the recent meeting of the British Medical Association, on "Suture of the Patella," with a new suggestion dealing with a shortened rectus muscle (*Lancet*, August 13, 1887). He believed that a permanently short ligamentous union was as good as union by bone. Almost all cases, however, where the union was a ligamentous one, were liable to tear. After wiring the patella he had his patients up in three weeks. He exposed the fragments, drilled opposite the centre of the fracture, used silver wire, twisted the ends and hammered them flat, and left them as a permanent clamp. Where the lower fracture was much smaller than the upper, he drilled from the lower surface. In his last three cases there was no drainage of the joint. Shortening of the rectus muscle very often occurred; and if there were any uniting bands he cut them away, and in extreme cases incised the muscle, as suggested by Mr. Rutherford. These incisions were two in number, oblique, but did not entirely divide the muscle, the portion left on one side being incised on the other.

DEATH FROM CHLOROFORM.

KAPPELER, in the *Archiv f. Klin. Chirurgie*, No. 35, 1887, discusses the question whether there is any connection between death from chloroform and the development of gas in the heart. Authors differ so widely upon this point that Kappeler was led to institute an experimental study of the subject, the results of which are as follows: He found that the development of gas in the heart is a frequent occurrence soon after death, and that it often cannot be traced to any visible decomposition. This phenomenon is not peculiar to the bodies of those dying from chloroform, but it may be the case, and this must be ascertained further, that it occurs more frequently with the bodies of those dying from chloroform than from other causes. Inasmuch as this gas is nitrogen, it seems natural to suppose that its production in the heart is

a post-mortem phenomenon, attendant upon decomposition. In chloroform-poisoning, inasmuch as we do not find this production of nitrogen gas during life in the tissues, it is probably a usual phenomenon of death, not dependent on chloroform.

THE THERAPEUTICS OF THE URIC ACID DIATHESIS.

The treatment of the uric acid diathesis was made the subject of discussion before the Section of Pharmacology and Therapeutics at the Dublin meeting of the British Medical Association. The subject was introduced by DR. BURNEY YEO in an address which commanded the attention of a large auditory for nearly an hour (*Lancet*, August 13, 1887). He said he would endeavor to confine himself to the practical aspects of the question. The pathology of the condition in which uric acid was present in excess in the organism was still doubtful. Murchison regarded the liver as primarily at fault, and with this view Professor Latham was disposed to concur. According to this theory, the essential condition present was the non-metabolism of glycosin into urea. Garrod, on the other hand, regarded the kidney as the active producer of uric acid. Ebstein placed its production in the muscles and marrow of bones. Frerichs held that the essential point was the perverted metabolism of albuminoid substances into urea. Bouchard denied that the presence of uric acid in excess was the chief feature in the morbid condition in question. One thing appeared certain,—that the uric acid diathesis had its foundation in the imperfect metabolism of food, especially albuminoids. He (Dr. Yeo) would define it as “mainly a disturbed retrograde metamorphosis.” Turning to therapeutics, he would point out that in all therapeutic questions three things had to be taken into account: 1, the pathogenic factor; 2, the constitutional factor; 3, the remedial factor. The two former were highly variable, and only the last had any claim to constancy. He would deal with the various remedies in detail. 1. Diet, regimen, and mode of life. There could be no doubt that, next to heredity, errors in eating and drinking were the most potent causes of the uric acid diathesis; but it was an error to assume that all gouty people had been intemperate. Ebstein regarded a tendency to obesity as a potent factor in the production of the condition, and advocated a dietary to check fat formation. He did not,

however, entirely exclude fatty matters from the dietary. He allowed cabbage, peas, etc., but no turnips. He (Dr. Yeo) thought that no good results followed from prohibiting the moderate use of animal food. Senator advises a minimum of fats, and especially prohibits the yolk of egg. As regards alcohol, he thought it would be better for some persons, especially women, to abstain altogether; in others a moderate use of alcohol was not objectionable. Malt liquors and bad wines were to be carefully avoided. He regarded the cheap clarets in common use as particularly injurious. He held strongly that the *quality* rather than the *kind* of wine was the really important point. As a general rule, those wines were best which had a diuretic action. A small quantity of alkaline water might be advantageously added to the wine. Still Moselle was good, and was now much used. Exercise in moderation was important as tending to improve the general health, but it must be borne in mind that gout was very common in those who took a great deal of exercise, and that women, who led comparatively inactive lives, suffered far less than men. A warm, dry, equable climate was useful. All climatic conditions which interfered with the action of the skin were hurtful. He advised the regular use of considerable quantities of water, preferably hot water. Turning to drugs, colchicum had been much assailed of late years, but he had never observed the ill effects which some authorities attributed to its use. Garrod, Sir Thomas Watson, and Graves had all borne witness to its value. He believed that its chief action was upon the liver. It had also sometimes a diuretic and diaphoretic action. As regarded the salicylates, he could not agree with Germain Sée that salicylate of sodium was the best remedy which we possessed. The benzoates had been highly recommended, but he was not convinced of their utility. Guaiacum, in spite of the high commendation of Garrod, seemed to be generally neglected. Iodide of potassium was very useful. Alkalies were in almost universal favor, but Dr. Latham did not think highly of them. There was a disposition at present to exalt unduly the merits of lithium, in comparison with sodium and potassium. He thought bicarbonate of potassium was the most certain diuretic of the group. Magnesia and lime had been largely lost sight of, but the success attending the administration of the waters of Contrexéville (which contained large quantities of these salts) should direct our attention to them. He thought Bath was likely to be as useful as

Contrexéville, and it was a much more attractive place. The mineral constituents of the waters at these two resorts were similar.

THE TREATMENT OF MORPHOMANIA.

BALL and JENNINGS, as an extension of the work already referred to in the *GAZETTE*, have observed in tracings taken of the pulse of morphomaniacs, when taken soon after an injection of morphine, that the curve greatly resembles that of chronic nephritis or aneurism of a large artery,—a moderately great line of ascent, a flat summit, and a slow descent. A few moments after the injection there was a rapid ascent, a sharp angle, and a rapid fall, with the normal secondary wave. These observations led the writers to question whether a cardiac stimulant would not prove useful in lessening the suffering of morphinism, and they seem in this supposition to have been correct. The remedy which they employed was sulphate of sparteine, which, in doses of from $\frac{1}{4}$ grain to $\frac{3}{4}$ grain, produced a most favorable effect upon the heart and also the general condition of the patient. An attempt was made to use nitro-glycerin, but it was too transient in its effects, and also gave rise to unpleasant after-effects.—*Bulletin de l'Acad.*, No. 17, 1887.

CHRONIC TOBACCO-POISONING; ITS INFLUENCE ON THE HEART AND STOMACH.

FAVARGER reports, in the *Wiener Med. Wochenschrift*, No. 37, 1887, the case of a man accustomed for a long time to smoke moderately, to whom he was called to relieve a severe asthmatic paroxysm, which left the patient suffering from difficult breathing and cyanosis. When the patient was first seen he was suffering severe dyspnoea, the sensorium was not clear, the pulse was very rapid (140 to 160 per minute). The axillary temperature was 95.6° F. and 96.5° F., the radial artery was contracted, the pulse small, and both pupils narrow and reacting very little. Obstinate constipation was present. On the twelfth day of the illness a laxative produced a normal stool. On the fourteenth day the patient passed blackish, altered blood; on the twenty-first day death occurred, with symptoms of internal hemorrhage. The autopsy showed dilatation and fatty degeneration of the heart, a chronic gastric ulcer at the pylorus, in which opened an artery, and hemorrhage in the entire intestinal tract as an im-

mediate cause of death. The patient was 60 years old. As nothing of sufficient severity to cause death was found in the body, it was considered a case of nicotine-poisoning, and the fatty degeneration of the heart was explained by the spasm of the coronary arteries produced by tobacco, producing ischæmia and fatty degeneration of the heart-muscle. The failure in circulation, following fatty degeneration of the heart, was especially predisposing to ecchymosis and erosion in the mucous membrane of the stomach, with the formation of ulcers. In addition to this it is probable that the saliva which was swallowed by the patient had a direct irritant effect upon the mucous membrane of the stomach, greatly predisposing to erosion and ulceration. Regarding the treatment of chronic tobacco-poisoning, in addition to the great point of abstinence, Favarger advises that smoking be never indulged in on an empty stomach. Inasmuch as nicotine has been found in perspiration and urine, he considers it not unreasonable that means to promote its elimination be used in treatment, such as baths, packs, diuretics, and diaphoretics.

MANAGEMENT OF ANTERIOR AND POSTERIOR DISPLACEMENTS OF THE UTERUS.

In opening the discussion on this subject before the Section in Obstetric Medicine at the Dublin meeting of the British Medical Association, DR. HALLIDAY CROOM (Edinburgh) said that he quite realized the responsibility he incurred in endeavoring to lay down definite lines of treatment in such a vexed question as that of anterior and posterior displacements of the uterus (*Lancet*, August 13, 1887). He divided them into two great classes,—(1) those occurring in nulliparous women; and (2) those occurring in parous women. In the first class he believed the displacements were entirely congenital, due either to non-development or deformity, and he strongly recommended that mechanical interference should, as a general rule, be avoided, both in anterior and posterior displacements. He believed that in the majority of cases they gave rise to no symptoms, and when symptoms of dysmenorrhœa or pelvic distress were present, concurrently with them these symptoms were due to some affection of the uterine annexa, for which mechanical treatment was utterly unavailing. He did not deny that in some exceptional cases mechanical treatment was

necessary, but these cases were so rare as not to affect the general fact. With regard to parous women, the case, he thought, was distinctly different. In many the symptoms arising from anterior displacements were due to some inflammatory process in or around the uterus, and the treatment should be directed to the removal of those inflammatory products, and not mechanically to the displacement of the uterus. With regard to posterior displacements in parous women, Dr. Croom thought that a distinction ought to be drawn. They, as a rule, were brought about mechanically, and, speaking generally, were the only forms of uterine displacement that required mechanical treatment. In the case of retroversion, if no adhesions were present, he believed that the uterus ought to be accurately replaced bimanually without the use of the sound, and retained in position by a Hodge pessary, or some other modification of that instrument. In retroflexion the Hodge pessary seemed to him inapplicable, and he believed that, as a rule, endeavors at replacement should be employed with care, and the uterus retained *in situ* with an ordinary ring pessary. In conclusion, he pointed out that there were some cases which required exceptional treatment, but in the main he advocated mechanical treatment for posterior flexions and versions only in parous women.

THE ELIMINATION OF IRON AFTER SUBCUTANEOUS AND INTRA- VENOUS INJECTIONS.

JACOBI made experiments bearing on this point by examining the urine of rabbits and dogs to which he had given iron subcutaneously or by intravenous injection. He used a preparation of iron not decomposed by albumen or alkalies, a form of the tartrate. On examining the urine qualitatively with ammonium sulphate he obtained only a negative result after injecting small doses subcutaneously. When the point of the syringe was introduced into a vein, the urine gave a reaction for iron at once. Jacobi studied the elimination of iron most carefully and accurately by removing the urine from the ureters by canulæ, which conducted the fluid into small glass vessels, which were changed every ten minutes, and which were tested by sulphate of ammonium. He demonstrated by this means the fact that after introducing iron into the blood it may be detected in the urine in twenty minutes, and that its elimination continues for three hours' time. An in-

crease in the quantity of urine excreted during the administration of iron was not observed. The quantitative estimation of the iron collected gave the result that the kidneys do not excrete more than from two per cent. to four per cent. of the quantity injected. A dog to which was given an equal quantity of nitrogenous matter and iron was found to excrete daily about 1.08 milligrammes ($\frac{1}{80}$ grain) of iron, which was determined by reducing from the ash of the urinary solids the iron with zinc, and treating it with permanganate of potassium. The same animal received iron by intravenous injection in three terminal subcutaneous veins in considerable quantities. The symptoms produced were tremors, movements of the head, loss of appetite, and lassitude. In twenty-four hours after the injection the elimination was ended. During the first day of injection the elimination was proportionate to the amount injected,—4.6 per cent. The iron injected was not given in one dose, but in several. On the third day a large dose of iron was injected, but only 1.4 per cent. was eliminated. By this was shown that the power of elimination possessed by the kidneys was very limited for any one call upon them; that the greater the number of divisions in which a given dose was given, the less the elimination became after each one. A certain amount of the iron was found to remain in the intestines of dogs, as has been observed in the case of bismuth.—*Schmidt's Jahrbuch.*, 215, 1887, No. 7.

THE PHYSIOLOGICAL ACTION OF ULEXINE.

PINET reports his researches on the action of this substance, as given in the *Archiv de Physiologie*, No. 19, 1887, as follows: He found this substance to be an alkaloid, soluble in water, crystalline, and bitter; it is derived from the seeds of the *Genista*. Repeating experiments which had been made upon frogs in England, he found that when put upon the tongues of frogs its action was to cause spasms, very much as cocaine sometimes does. In a few moments after the subcutaneous injection of $\frac{1}{40}$ of a grain of hydrochlorate of ulexine, he observed in frogs a period of disquiet, followed by convulsions, which resembled those caused by nicotine, and were elicited by disturbing the animal. Five minutes after the injection had been made, the animals became motionless, reflex motions ceased, and also respiratory move-

ments. The heart-beat persisted. After still five minutes no response was obtained on electric irritation of the central or peripheral ends of the ischiatic nerve; the heart beat feebly. After twenty-four hours there was no movement of any kind; the heart-beat was slow and weak; electric excitability of the muscles still persisted. Twenty-six hours after injection death occurred, the heart-beating is lost in attempted diastole. Other experiments resulted similarly. In studying the electric excitability, it was found that at first the excito-motor strength of the nervous centres and the nerves themselves were paralyzed. The substance influenced the nervous system and not the muscles, which could be made to contract by electric stimulation twenty-four hours after administration of the drug. Similar phenomena were also seen after the injection of ulexine when the spinal cord was severed below the medulla oblongata. Small doses, of $\frac{3}{40}$ of a grain, caused the same results, but in lesser degree, the posterior extremities being contracted in convulsions. Corneal reflexes were much lessened. Respiratory movements were very slow, but did not cease entirely; narcosis finally appeared, and, after twenty-six hours, the animal was perfectly well. Doses of $\frac{1}{10}$ of a grain produced similar phenomena, without convulsions. The writer had never seen the same effects from cocaine. In frogs, from which the cerebral hemispheres had been removed, the loss of consciousness came on more slowly, after forty or fifty minutes completely, perhaps because of a slower absorption of the poison on account of the shock produced. In guinea-pigs a subcutaneous injection of $\frac{3}{40}$ of a grain produced no effect; $\frac{1}{4}$ of a grain produced, after ten minutes, somnolence and delayed motion; $\frac{3}{40}$ of a grain, when injected into the abdominal cavity, caused death from peritonitis. In concluding his experiments the writer tested ulexine as an antidote for strychnine, giving a frog first $\frac{1}{1800}$ of a grain of strychnine, and then, after a few moments, $\frac{9}{20}$ to $\frac{3}{4}$ of a grain of ulexine. The result was that the ulexine not only prevented the onset of the strychnine convulsions, but had the power of checking them when they had broken out. This antagonism is only an apparent one, however, for, if the animals survive, in a few days complete insensibility and convulsions recur. Ulexine masks the action of strychnine for a time only. The reason for this is that the action of ulexine is much more rapid than that of strychnine.

PEAT MOSS AS A DEODORIZER.

DR. D. M. USPENSKI, in a preliminary note in the *Vratch*, describes a number of bacteriological and other observations he has made on a kind of peat moss belonging to the sphagni, which is indigenous in many parts of Russia and Siberia, and which is used with considerable success in the form of coarse powder for disinfecting cesspools and privies in Warsaw, Riga, and other towns. It is found that about four ounces sprinkled over an ordinary stool is sufficient to deodorize and dry it, so that the receptacle can be emptied and cleaned at proper intervals without any unpleasantness arising. This substance seems to have a wonderful power of absorbing moisture, for it was found by experiment that a pound of it which already contained twenty-five per cent. of water was capable of absorbing no less than seven pounds and a half more water. When added to fecal matter in the proportion of ten per cent. by weight, it changes it into an almost dry mass of an earthy appearance, devoid of smell and easy to remove. A hundred pounds of the powdered moss will absorb fourteen hundred and thirty-eight litres of ammonia. The dry mass obtained by the action of the moss on fæces, on being analyzed by Mr. Miltser, was found to contain from 2.38 to 2.66 per cent. of nitrogen and from 0.96 to 1.15 per cent. of phosphoric acid, and of course formed a very valuable manure. The powder as received contained 23.9 per cent. of water and 5.38 per cent. of ash, and without any preliminary drying they absorbed fourteen times their own weight of water. Bacteriological experiments proved that the moss has a great capacity for diminishing micro-organisms of various kinds. If this substance can be easily and cheaply obtained, it would appear to offer advantages over the dry earth we are accustomed to use, and in large towns would doubtless prove very valuable.—*Lancet*, September 10, 1887.

THE PHYSIOLOGICAL EFFECTS OF RED COLORING MATERIALS EMPLOYED IN COLORING FOOD-STUFFS.

ARLOING and CAZENEUVE have made experiments to ascertain the toxicity of coccelin and a Bordeaux-red, which are employed to color nitrogenized food-stuffs. The innocuousness of these substances may be inferred from the fact that as much as 18 grammes (3ivss) was injected into the blood of a dog without a fatal effect. The organs of cir-

culatation and respiration were, however, very greatly affected. The heart's action was much weakened, the small blood-vessels paralyzed, and the inspiratory movements almost abolished. First to fail was the vaso-motor system; then the respiratory apparatus and the heart were attacked. If still more of the substance was injected, death from heart-paralysis followed. An analysis of the gases contained in the blood showed the processes of oxidation after the injection into the blood but little affected. When these substances were fed to animals for a long time they were absolutely harmless. Post-mortem examination of animals which died after taking the substance showed in the internal organs nothing whatever abnormal. The use of these substances to color sweetmeats and liquors, and other allied food-stuffs, Arloing and Cazeneuve consider justifiable, while, on the contrary, other injurious coloring-matters are to be expressly forbidden.—*Bulletin de l'Académie*, No. 17, 1887.

A CASE OF EXTRA-UTERINE PREGNANCY CURED BY LAPAROTOMY.

SCHUSTLER reports, in the *Wiener Medicinische Wochenschrift*, No. 37, 1887, the case of a woman, aged 33, who was admitted into Von Dittel's clinic for the treatment of an abdominal tumor. She supposed herself pregnant, but all the usual signs of pregnancy were wanting. A diagnosis of a tumor proceeding from the internal genitalia, and probably a multilocular ovarian cyst, was made. When laparotomy was performed, the case was recognized as an extra-uterine pregnancy, whose sac contained a decomposed, fully-developed foetus. The mass was removed, the placenta not being recognizable. An attempt to remove the entire sac failed, on account of its connections with the abdominal viscera. Its walls were, however, stitched to the edges of the abdominal incision, and its cavity was filled with iodoform gauze, and a drainage-tube was brought out at the external wound. The further progress of the case was entirely favorable. The sac suppurated freely, and many pieces of necrotic tissue were discharged, which were thought to be pieces of placenta which had decomposed. The patient made a good recovery in about three months. The writer considers that the great danger which the presence of a dead and decomposed foetus, when developed outside the uterus, occasions to the pregnant woman, is full warrant for resorting

to laparotomy to remove the danger. This is especially true when the condition of the patient is so good as to lead to the hope that an operation will be successful, and when the condition of the case will not admit of delaying until the decomposition of the foetus and the peritonitis, which it occasions, have rendered an operation hopeless.

THE LOCAL TREATMENT OF AFFECTIONS OF THE BLADDER.

ULZMANN, of Vienna, critically reviews the use of the vesical douche, and reaches the following general conclusions and rules for practice. First, he excludes from treatment by the vesical douche all acute affections of the bladder: such diseases, if they heal at all, do so with dietetic and medicinal treatment. In chronic inflammations of the bladder we must discriminate whether the trouble is primary and isolated, or whether in addition to the bladder the vesical neck, posterior urethra, or prostate is affected. If the latter be the case, as in young men who from gonorrhoea contract chronic vesical catarrh, the neck of the bladder and the posterior urethra must be included in the treatment. This is best accomplished by introducing a soft catheter or small silver catheter in the bladder and then withdrawing it about an inch, so that the point of the catheter is in the neck of the bladder: with a small syringe the solution is slowly injected. The fluid enters the bladder but does not return into the catheter, as its fenestra is closed by the neck of the bladder. After all has been injected the catheter is withdrawn, and the patient empties the bladder spontaneously. If, on the other hand, the bladder itself is implicated, the fluid is injected through a catheter giving a double current and allowed to return. As the bladder is contracted, but a small portion of its mucous membrane will be reached by the fluid. It is best to inject the fluid through a soft catheter, using a syringe held in the hand. When irrigators are used too much fluid is introduced, and if the bladder is weak it may be dilated. Only in rare cases of contracted bladder in young persons is this method useful. The precaution must also be taken to empty the bladder thoroughly after each injection. When possible, it is best if the patient stand during the irrigation. For irritable bladder Ulzmann advises lukewarm water with tinct. opii, cocaine one-fourth per cent., resorcin one-half per cent., carbolic acid one-sixth per cent. when espe-

cially irritable. When the urine has undergone ammoniacal decomposition, solution of potassium permanganate one-tenth per cent. or three drops of amyl nitrite to a pint of water are recommended; for phosphaturia one-tenth per cent. salicylic acid is advised. —*Centralblatt für Chirurgie*, No. 30, 1887.

ABSENCE OF FREE HYDROCHLORIC ACID IN THE GASTRIC JUICE.

The diagnostic value of the absence of free hydrochloric acid in the gastric juice in cases of malignant disease of the stomach is discussed at some length in a recent paper by DR. V. G. NECHAJEFF, of St. Petersburg. For the detection of free hydrochloric acid no less than thirteen different tests have been proposed. Of these he considers the following to be the most useful: 1. A solution of tropeolin in water, as proposed by Edinger; this has of itself a yellow color, but when brought into contact with a solution containing 0.01 per cent. of HCl it becomes a dark cherry-red. 2. Methyl violet becomes blue on the addition of 0.025 per cent. of HCl. 3. Congo paper shows a blue tinge on being immersed in a solution containing 0.025 per cent. of HCl. 4. A mixture of three drops of liquor ferri perchloridi with the same quantity of carbolic acid in twenty cubic centimetres of water shows the presence of lactic acid or its salts by becoming yellow; but if free hydrochloric acid is also present the reagent becomes colorless. This is therefore an excellent test for free hydrochloric acid when lactic acid or the lactates are present. Dr. Nechaieff advises that all these tests should be applied in each case. He found that in cases of carcinoma of the stomach, and apparently in carcinoma of the œsophagus, absence of free hydrochloric acid constituted the rule, and its presence the exception, and is disposed, therefore, to think that its absence affords a practically useful diagnostic sign in cases where cancer of the stomach or œsophagus is suspected. Thus, in seven cases of carcinoma of the pylorus, though one hundred and forty-two examinations were made, free hydrochloric acid was never found, though lactic acid invariably existed; and again, in one hundred and five examinations of four patients with carcinomatous stricture of the œsophagus, no free hydrochloric acid could be detected. In a case of cancer of the rectum, however, the presence of free hydrochloric acid in the contents of the stomach was very distinct. —*The Lancet*, June 4, 1887.

THE TREATMENT OF ACNE.

BROCQ recommends as essential in the treatment of this disease the free use of hot water, alone or with camphor (alcoholic solution) or cologne. In addition he gives the following formulæ, which he has found of service in his own practice:

R Hydrarg. bichlorid., gr. xv;
Alcohol, ℥iiss to iii;
Aquæ rosæ, ℥ivss or iii.

This solution may be diluted as required by hot water. The following is an ointment used by Hebra:

R Sulphur. precipitat.,
Potass. bicarb.,
Glycerin,
Aquæ lauro-cerasi,
Spts. vin., aa ℥ii.

This is applied during the night; on the morning following it is removed by washing in warm water, and during the day a protective paste like the following is used:

R Zinc. oxid. pulver., gr. xxx;
Vaselin. pur., ℥vi¼.

At the hospital of St. Louis this sulphur paste is a favorite application:

R Sulphur. precipitat., ℥iii¼ to ℥viiss;
Alcohol. camphorat., ℥viiss;
Aquæ ros., ℥iii¼;
Aquæ destill., ℥iv¾.

This is also used at night, and an oxide of zinc ointment is used during the day. —*Revue Générale de Clinique et de Thérapeutique*, July 14, 1887.

ICHTHYOL IN SURGERY.

LORENZ, surgeon to the Alexander III. Uhlan Regiment, describes his studies with this substance in surgical practice, and their results, as follows in the *Deutsche Medizinische Zeitung*, No. 59, 1887. The writer has extended his use of this substance, and has treated not only superficial lesions, but also wounds and deeper losses of substance. As an important means of treating these cases he has used cold applications, in some cases an ice-bag, but generally cold compresses, which are changed every ten minutes if needed, and later every two hours. As a substitute for the cold compress, and an adjuvant; especially where an instantaneous use is needed, ammonium sulpho-ichthyolicum has been found to produce its effect more quickly and surely. Pain and swelling dis-

appear after one to three inunctions, and the patients can resume their journey when the condition of the lower limbs admits. The application of ichthyol allows the injured part to remain undisturbed, as it need not be renewed so often as compresses.

The mode of application is as follows: the limb is thoroughly cleansed with soap and water, and thoroughly and completely dried. Ichthyol in solution or in ointment is then rubbed in, but friction is not continued as long as with other ointments, as it is not necessary, and the limb is then bandaged with cotton fastened by an ordinary bandage. If it is impossible to first wash the part, the inunction with ichthyol may be done at once. These applications may be repeated two or three times daily, care being taken in removing the dried and accumulated ichthyol that the newly-formed cicatricial tissue may not be destroyed in cleansing the part. In comparing the length of time occupied in cures by ichthyol with that given up to hydrotherapy, ung. cinerea, and other commonly-used substances, it was found that the former needed only two-thirds of the time which the ordinary treatment required. Four cases are reported of serious lesions which were successfully treated. The first of these was a severe lacero-contused wound of the foot, to which ichthyol was applied ten hours after the injury was received. Four applications were enough to secure a cure; the swelling at the point of injury subsided entirely, and a slight weakness which supervened was gone in three or four days. A second case, of a serious wound of the hand, was relieved after six inunctions of ichthyol. A third case was that of an injury by a kick from a horse, producing a severe injury to the knee, which was treated at first by the application of cold and by rest. The knee did not improve, but became greatly swollen and very painful. Inunctions with ichthyol three times daily were made, and a series of measurements of the affected joint were taken. It was seen that a progressive diminution in size and sensitiveness followed. The treatment by ichthyol was alternated with hydrotherapy, with immobilization, with plaster of Paris bandages, and with electrical treatment. The final result was cessation of pain and cure by ankylosis. In wounds of minor character the following ointment has proved useful, either rubbed directly into the wound or laid upon it spread on bandage material:

R Ichthyol, 1 part;
Ung. paraffini, 70 parts.

In the excoriations common among children, and in all solutions of the continuity of the skin from which they often suffer, ichthyol is of great utility applied immediately after bathing. It causes at first a slightly burning sensation, but this is succeeded by cessation of all pain and irritation. It may be conveniently used in this ointment:

R Ichthyol, gr. iii;
Ung. paraffini, 3xxv;
Cumarini, gr. viii to gr. xv.

In burns and frost-bites a one per cent. salve of ichthyol and vaseline speedily relieves the burning pain and furthers cicatrization. In severe burns a watery solution, from two to ten per cent., is useful in allaying pain. In acute coryza, inflammations of all kinds upon the mucous membrane or skin of the nose, and in furuncles in the nostrils, a mixture of one to ten per cent. of ichthyol and vaseline may be applied, and gives great relief. In facial erysipelas the writer had the most satisfactory results with the continued use, at hourly intervals, of

Ichthyol, 3v;
Ether,
Glycerin, aa 3iiss;

which was applied with a camel's-hair pencil. While the remedy is not a specific, still it exercised a prompt and potent influence. Nussbaum reports five cases of erysipelas which were promptly cured by ichthyol and vaseline. There is as yet no ground for believing that ichthyol possesses antiseptic properties. If a wound be perfectly aseptic the application of pure ichthyol can introduce no element of danger, and will greatly hasten healing. It seems probable, however, that it may be combined with an antiseptic in such a manner as to be applicable to wounds as an immediate dressing. It would be an excellent prophylactic dressing against erysipelas, and in this respect an important field may be open for it. It should not be applied to wounds secreting freely with cotton, as the secretions of the wound become matted into the cotton, and drainage and disinfection are greatly hindered. It is best used in solution or in ointments, or, when indicated, in ichthyol plaster, the last but rarely. The preparation best adapted for general use is the combination of ichthyol with paraffine ointment, 1 to 70.

THE INFLUENCE OF MYDRIATICS AND MYOTICS UPON INTRAOCULAR TENSION IN NORMAL CONDITION.

STOCKER, in the *Archiv für Ophthal.*, xxxiii. 1, 1887, reports his recent observations with a manometer on the influence of the mydriatics and myotics in rabbits' eyes. His results differ from those given in text-books not only in the statement that the action of the pupil stands in a relation of cause and effect with the intraocular tension, but also that atropine increases the internal tension of the eye, that eserine lowers it, etc. His conclusions briefly stated are as follows:

1. Atropine, with animals curarized but not narcotized, slowly reduces intraocular tension (six millimetres).
2. Cocaine (two to three millimetres) lessens intraocular tension.
3. Both of these mydriatics do not influence the curvature of the cornea.
4. Eserine increases primarily the tension in an eye in physiological condition (three millimetres). Secondly, the tension is lessened: this secondary lessening is greater than the primary increase (four millimetres).
5. Pilocarpine increases considerably at first the intraocular tension; afterwards it is slowly lessened.
6. Both of these myotics shorten the corneal curvature.

THE TREATMENT OF PRURITUS OF THE VULVA.

DR. H. VON CAMPE, of Hanover, reports in the *Centralblatt für Gynäkologie*, No. 33, 1887, the following case, which illustrates the value of electricity in this most troublesome affection. Two years ago the patient, aged 53, came under the observation of the writer complaining of obstinate itching about the genitalia and anus. She had borne four children, and had aborted twice at three months. Some years previous the uterus had been curetted for disease of the endometrium, which caused frequent menorrhagia. Since this was done she had been annoyed by a persistent discharge, which had so irritated the parts that an eruption attended by intense itching had followed. The patient had tried all methods of treatment, even allowing the excision of a portion of mucous membrane which itched most severely, but without avail. When she came into the care of the writer she had not been treated for some time, having exhausted her resources and patience. Treatment by Unna's method, of salicylic-

acid salve and cocaine, gave only temporary relief. The vulva and adjacent parts remained a livid red, the elasticity of the skin was greatly diminished, and lesions caused by scratching were present. The discharge from the vagina was not great in quantity, and of a feeble acid reaction. The uterus was atrophic. The urine contained no sugar and no albumen. No signs of syphilis were present. The failure of other procedures led the writer to try electricity, and accordingly the galvanic current from six elements was used, the anode being placed in the vulva and the cathode upon diseased portions of the integument; the current was continuous. The applications lasted ten minutes. In addition, vaginal injections of weak, lukewarm carbolyzed solutions were made morning and evening. The result of the first application was cessation of the itching for several hours. The treatment was continued daily, intermitting at times, and increasing the number of elements to ten, for over a month, when the patient's condition was sufficiently good to warrant a cessation of the treatment. At this time only a sensation of slight itching and burning was present. The patient was able to sleep nearly all night, and to refrain from scratching and irritating the parts. The success in this case proved permanent after two years' time, and the writer felt himself justified in calling attention to this mode of treatment as one rational, uninjurious, and likely to prove of benefit in these intractable cases. It is at least worthy of a further and more extended trial.

ANTIFEBRIN IN THE TREATMENT OF LANCINATING PAIN.

FISCHER, of the Hospital for Nervous Diseases at Cannstatt, reports his observations in the use of antifebrin in the treatment of lancinating pain, in the *Münchener Medicinische Wochenschrift*, No. 23, 1887, as follows: Following the suggestion of Lépine, the writer treated ten cases of tabes dorsalis, on whom eighty or ninety observations were made. In general the results were most satisfactory, and corroborated the statements of Lépine fully. Among the ten patients the remedy failed in its effect only once; in the other cases its effects were prompt and powerful. Untoward effects in the eighty observations made for the relief of pain by antifebrin were present in only two instances, and these were exceptional among patients who formerly and afterwards were benefited by the drug. The writer felt justified in concluding that anti-

febrin is a specific remedy for the lancinating pains of tabes, whose effect, however, is not always uniform, nor constant, with the same patient at different times; the painful crises of tabes were generally favorably influenced by the drug. In long-continued use of the drug ill after-effects were not observed. A mild grade of cyanosis was observed in one case. All reported that very shortly after taking the remedy a pleasant, comfortable sensation of warmth pervaded the entire body. As many of the patients were ambulatory cases, it was impossible to make systematized observations on the pulse. The fact that the cases treated were not suffering from fever, and were without disease of the circulatory organs, explained the absence of ill after-effects with comparatively large doses. It is considered best to give to tabetic patients larger doses than would be indicated for those suffering from pyrexias: Lépine regards 30 grains as permissible. The effect of the drug was manifest, as a rule, from thirty to ninety minutes after the administration of the first dose ($\frac{3}{4}$ grain). If no effect follows this dose, a second small dose is given. The remedy resulted best in cases in which it was given to relieve a well-marked paroxysm. The results obtained in the treatment of neuralgias and migraine seem to indicate that all paroxysmal pain is especially susceptible to treatment by this remedy. Patients whose pains were like lightning from a clear sky, disappearing in a few moments as suddenly as they came, were not benefited by the drug: the point of influence for antifebrin seems to be wanting in these cases. The writer does not hesitate to use the remedy in broken doses in the treatment of chronic neuralgias, especially those of spinal origin, and the girdle sensation of tabes, especially as its effect is not lessened by an acquired tolerance. He gives his patients powders containing three and three-fourths grains, instructing them to take two powders when an attack of pain threatens, and, if needed, more. It is best to drink wine or cognac after the powder is taken. In other diseases characterized by paroxysmal pain, as in hemicrania, the drug has a positive influence. In addition to the treatment of tabes, the writer has given it as a nervous stimulant in fourteen cases. He obtained good results in (1) a case of syphilitic occipital neuralgia, which had resisted a persistent course of treatment by inunction. (2) In a case of specific dementia paralytica, with very severe nocturnal pains in the bones. (3) In three cases of headache

complicating severe anæmia. (4) In four cases of hemicrania or vaso-motor cephalalgia. In two of the cases typical migraine was present, and the patients, who were not hysterical, recognized the prodromata, and calculated the course of the attack sufficiently accurately to use the remedy as a prophylactic and also aborting remedy, with remarkably successful results. Negative results were obtained in five cases: 1. In a severe sciatica through disease of the veins; 2. In hysteria; 3. In dental neuralgia from caries; 4. In brachio-intercostal neuralgia in old men; 5. In a case of rheumatic neuralgia. Fischer repeats the account of Cahn's cases in the clinic at Strassburg. In two cases of gastric crises in tabes one was observed, after long-continued use of the drug in large doses, to suffer from cyanosis, and in the blood the presence of methæmoglobin. The urine contained an abundance of free SO_4H_2 . The blood-changes, however, occasioned the patient no inconvenience.

In a third case of gastric crisis the remedy had very little effect. Two cases of migraine were cured. A long series of headaches from various causes were promptly relieved by antifebrin. A good result was obtained in a phthisical patient who suffered from acute multiplex neuritis. In a case of obstinate pruritus, complicating carcinoma of the liver, the drug was useful in long-continued large doses. In pruritus senilis it had a limited value only.

*A CASE OF CHRONIC PERITONITIS
HEALED BY SPONTANEOUS
PERFORATION.*

HOCHHAUS reports in the *Deutsche Medicinische Wochenschrift*, No. 20, 1887, the following case: A little girl, $5\frac{1}{2}$ years old, had lost appetite for two months; digestion was painful, accompanied by regurgitation, and often by vomiting; the borders of the abdomen were sharply outlined; diarrhœa and constipation alternated. The child lost weight steadily, while the abdomen was excessively distended. On admission to the hospital, the abdomen was found painful on palpation; the percussion-note dulled to the umbilicus, and fluctuation evidently present. In the days immediately following admission intense fever, with evening exacerbations, vomiting, and diarrhœa, followed. A diagnosis of tubercular peritonitis was made. After several days the swelling evidently pointed near the

umbilicus; the abdomen retracted in several directions, the point of greatest prominence at the umbilicus became red, and changes in the areas of dulness indicated that perforation was imminent. Surgical intervention was abstained from, and about eight days after admission to the hospital perforation occurred, and the discharge of half a pint of purulent liquid. The opening was enlarged, an additional pint of pus evacuated, and drainage and an antiseptic dressing were instituted. The temperature fell at once; dulness disappeared, and cure followed. Such cases are extremely rare; but examples of cure after spontaneous rupture of the abdomen have been reported by Galvagni, Rehn, Bauer, Henoch, Leyden, and recently by Fiedler and Rossi.—*Revue Mensuelle des Maladies de l'Enfance*, September, 1887.

THE DIURETIC EFFECT OF SALICYLIC ACID.

The following is an abstract of a full paper on this subject by DR. ARMIN HUBER, of the medical clinic at Zürich, contained in the *Deutsches Archiv für Klinische Medizin*, Band 41, 1 u. 2 Heft. The diuretic effect of salicylic acid was noticed in Professor Eichhorst's clinic, where it was given for rheumatism, and where it is the custom of the clinic to observe the amount of urine passed by each patient. Fleischer, Baelz, Gubler, Robin, Sassitzky, Bauer, Künstte, Von Maurel, and Currier have observed and reported this property of the drug. The writer conducted a series of observations upon rheumatic patients who were taking salicylic acid. In twenty-five cases whose histories he carefully analyzed, twenty-one, or eighty-four per cent., showed an increase in the secretion of urine immediately on taking salicylic acid, which promptly ceased as soon as the drug was withheld. In four cases, or sixteen per cent., the diuresis continued during the days when no medicine was given. The drug was given in doses of from 45 grains to 2 drachms in twenty-four hours, and the connection between the drug and the diuresis was very evident. In a subsequent series of nineteen cases of pleurisy and other non-rheumatic affections, diuresis was increased in 89.41 per cent.; in 8.23 per cent. lessened; in 2.35 per cent. it was uninfluenced. The average increase in diuresis with those patients so affected was more than a pint. Regarding the influence of the remedy

upon losses by perspiration and expiration, in fourteen cases on whom such observations were made nine showed diminished loss by these avenues, while five lost more weight by perspiration and expiration on the days when no salicylic acid was taken. The total loss of weight from all causes was greatest under the use of the drug, and hence it is claimed as a diuretic. The doses were generally 15 grains hourly, beginning at 9 A.M.; 60 grains were often given in four doses each quarter of an hour. A series of observations on the effect of the remedy in typhus abdominalis showed that the quantity of urine was increased in 57.1 per cent. of the cases, lessened in 35.7 per cent., and uninfluenced in 7.1 per cent. A comparison of these results with the nineteen cases which preceded indicates that in typhus abdominalis the diuretic effect is much less than in other diseases: this result is not a lessening in the quantity of urine secreted, but the absence of the usual diuretic effect which follows the use of the remedy. In chronic pulmonary tuberculosis a series of five observations and twenty-three single tests showed an increased secretion of urine of 65.2 per cent. To determine the effect upon the solid constituents of the urine observations were made on cases of articular rheumatism, pleuritis, and typhus abdominalis, in nearly all of which the quantity of solid matter excreted was increased. In regard to the specific gravity, the increase in the amount of urine passed was attended by a lowering of the specific gravity. Observations made with Marey's sphygmograph upon those who were taking the salicylates showed that the pulse-rate was slowed during the use of the drug. In cases of pleuritic effusion the effect of the salicylic acid was especially marked as a useful diuretic, and the result obtained in lessening the exudate was so marked that its further use was indicated as a diuretic. In all conditions in which obstruction to the circulation exists the salicylates were found most efficacious. In connection with the treatment proposed by Oertel, in one case a gain of fifty per cent. in the quantity of urine passed was observed after the use of the remedy. It was found best to give it intermittingly, pausing for one or two days; and in this way on the day following administration the characteristic diuresis was produced. In combination with decreased consumption of fluid and other hygienic measures the administration of salicylates as diuretics promises results of value, and is certainly worthy a more extended and thorough trial as a diuretic.

COCAINE IN THE TREATMENT OF SKIN-DISEASES AND SYPHILIS.

DR. S. LUSTGARTEN, of Professor Kaposi's clinic in Vienna, writes as follows on this subject in the *Wiener Medicinische Wochenschrift*, No. 12, 1887: The effect of the external application of cocaine to the normal skin is almost nothing; but if the external horny layer is excessively thinned or removed, cocaine comes in contact with the nerves of the skin and produces its characteristic effects. From these facts he derives three indications for the use of cocaine:

1. In eczema. In this disease we can consider only the acute and subacute forms with abundant vesicular, strongly-itching pustules. In such cases the application of a two per cent. solution, once or twice in twenty-four hours, produces a great remission in the itching. An especially valuable part is given to cocaine in the treatment of eczema of the genitals and anal region where the epidermis has become macerated by long-continued perspiration and secretion. In such cases the subjective symptoms, itching, burning, etc., often reach a great degree of severity. Cocaine, with the employment of lukewarm sitz-baths and ablutions with pure soaps once daily, generally produces great relief. Lustgarten prescribes,—

R Cocaini aleinici, gr. vi to xv;
Lanolini, ʒiv ½;
Olei olivar., ℥xxx. M. f. ungt.

Sig.—To be rubbed thoroughly into the affected parts twice in twenty-four hours for several minutes; apply powder afterwards.

In pruritus ani, in addition to the above, suppositories of three-fourths of a grain of cocaine may be used with excellent effects.

2. Ordinary salves or lanolin ointments with one per cent. of cocaine are recommended in skin-diseases attended by considerable loss of substance with great pain. This treatment is especially useful in the effects produced by escharotics containing pyrogallic acid or arsenic, in gangrenous herpes zoster, etc.

3. In the form of a two per cent. watery solution frequently applied, the external use of cocaine muriate is very useful in rendering the application of nitrate of silver to granulations otherwise painful devoid of suffering. The granulations become pale very rapidly, and the silver nitrate when applied over them is not felt. In a great number of cases cocaine may also be used with advantage subcutaneously. An injection of the following solution has been found most useful:

R Cocain muriat., gr. viii;
Acid. carbol., gr. iii;
Aq. destill., ʒii ½,

and this may be given in several points into the rete mucosum, or may be given in one single injection. The addition of carbolic acid makes the cocaine solution permanent. In fifty cases so treated, on whom minor surgical operations were made (circumcision, extirpation of epithelioma of the lip, athe-roma, etc.), the results were most satisfactory. It may be useful in this connection to mention that two applications of this solution, applied by a brush, are sufficient to anæsthetize a circular area of two centimetres (about one-sixth of an inch) in diameter. A further occasion for the application of cocaine is to render painless the subcutaneous use of mercury and arsenic. This is especially applicable in the injection once weekly of calomel and tannate of mercury. To render this painless, half of the contents of an ordinary syringe is sufficient. After the cocaine injection has been made the canula remains *in situ*, and through this canula the calomel suspension is injected. When cocaine is added to the preparation of mercury before injection, the compound is decomposed. Although three-fourths of a grain of cocaine by subcutaneous injection is generally well borne, yet a sufficient number of cases in which untoward results followed have been observed to render the exercise of caution necessary. Lustgarten reports three cases in which after such injections very noticeable ill after-effects were observed.

ANTIFEBRIN AS A NERVINE.

According to the Paris correspondent of the *British Medical Journal*, August 20, 1887, at a recent meeting of the Société Vaudoise de Médecine, DR. PAUL DEMIÉVILLE, of Lausanne, read a paper on "Antifebrin as a Nervine Remedy." He had used the drug in eleven cases of sciatica, eight of lumbago, seven of intercostal and mammary neuralgia, eight of trigeminal neuralgia, eleven of headache (megrim, dyspeptic and chlorotic cephalalgia, etc.), three of neuralgia of the forearm and hand (probably identical with "ulnar neuralgia," described by Dr. McNaught, of Rossendale, in the *Journal* of April 30, 1887, p. 933), seven of painful menstruation, two of senile gangrene, three of tabes, six of epilepsy, cancer, nettle-rash, hepatic colic, etc. The remedy was given (in adults), as a rule,

in $\frac{1}{2}$ -gramme doses, from one to four times daily; if that failed, $\frac{3}{4}$ of a gramme, and even 1-gramme doses were given once, twice, or thrice a day. On the whole, Dr. Demiéville is satisfied that antifebrin is invaluable as an anodyne. In painful affections the drug scarcely ever fails to give marked relief, the pain disappearing within a period varying from a quarter of an hour to two hours. Its sedative action is very often accompanied by a decided hypnotic effect, which is extremely welcome in cases in which pain is associated with obstinate sleeplessness. In a certain proportion of cases the anodyne effects are only temporary. In other cases relief lasts for a more or less prolonged space of time, a new attack yielding to another course of the drug. But in many cases a complete cure is effected within a couple of days or so. As an anodyne, antifebrin is recommended by the author especially for the relief of the agonizing pain of senile gangrene and cancer. The drug seems to diminish the frequency of fits in epilepsy; at any rate, it had this effect in five out of six such cases in which it was tried by Dr. Demiéville. He recommends it also in hysterical fits and in infantile convulsions. When used for a considerable period, as, for instance, in incurable cases of organic disease, the drug loses its effect somewhat in time; on being discontinued, however, for some days, it seems to recover its activity. With regard to secondary effects, Dr. Demiéville states that he has never known it to produce rigors or noises in the ears; but he has sometimes observed diaphoresis and slight giddiness, and once (in a drunken epileptic, aged 51) delirium and hallucinations resembling those of salicylism. As a rule the drug is well borne by healthy digestive organs, but in certain cases of gastric disturbance it may give rise to temporary loss of appetite and dyspepsia, more rarely to nausea and vomiting, and possibly to diarrhœa. In one case lachrymation and a pricking sensation about the eyes were complained of after several 1-gramme doses had been taken.

ETIOLOGY OF DYSENTERY.

PROFESSOR JAROSLAV HLAVA, of Prague, has examined (*Pizeglad Lebarski*, February 12, 1887) the stools and the intestines, with their contents, in sixty fatal cases of epidemic dysentery, two of sporadic and ten in which the disease occurred as a complication of other affections. Recent stools from dysenteric patients were injected into the rectum or

duodenum in seventeen dogs, six cats, eight rabbits, and in hens and guinea-pigs. In addition to this, seventy injections of pure cultivations of various bacteria which had been found in stools and intestinal contents were made. From those extensive observations Professor Hlava was led to the following conclusions: 1. Bacteria are not the cause of dysentery, since the disease cannot be produced in animals by introducing into them any microbes found in persons suffering from the affection. A simple passing intestinal catarrh is all that can be induced in that manner. 2. The injection of stools gives rise to dysentery only in cats. 3. There is no specific anatomical difference between epidemic and sporadic dysentery. 4. There are present in the stools (and sometimes in the mucous and submucous coats of the bowel) long or oval amœbæ with a granular protoplasm, which move about under the objective glass for ten hours. In sixty-five cases the amœbæ were very numerous. Dr. Hlava is now studying the question of their relation to the disease.—*Brit. Med. Journ.*, August 20, 1887.

THE TREATMENT OF WHOOPING-COUGH WITH RESORCIN AND THE PNEUMATIC CABINET.

DR. ARNTZENIUS reports in a recent number of a Holland journal (*Weekbl. van het Nederl. Tijdschr. voor Geneesk.*, No. 67, 1887) his experience in the treatment of whooping-cough by resorcin. The number of remedies for this disease he admits to be legion; but, encouraged by the results obtained with this method by Moncarvo, of Rio de Janeiro, he undertook the treatment. He applied a watery one per cent. solution to the fauces and nares, and had excellent results in seventy cases. Arntzenius had been surprised that the use of compressed air and the pneumatic cabinet had not been combined with treatment by drugs. The reason was that in so few cases is a cabinet accessible. In eleven cases which he treated by the combined method, a cure followed after sixteen sittings. It was noticeable that after the first application the general condition was greatly improved, the anorexia was much lessened, sleep was more quiet, the paroxysms of coughing became less frequent and less severe. When a paroxysm occurred, the child's condition was soon restored again. All exhibition of drugs internally was discontinued during this treatment. The sequelæ which so often occur and are so injurious were never seen to follow

this treatment. The writer considers the influence of the compressed air, by reducing contraction by mechanical means, is more important than any effect on the micro-organisms of the disease.

ANTIFEBRIN.

DR. HERCZEL, of Heidelberg, writes as follows on this subject in the *Centralblatt für die Medicinischen Wissenschaften*, No. 30, 1887: The experiments of the writer have shown that the influence of antifebrin is not only upon temperature but also upon the circulation of the blood and the nervous system, and that it is in these directions that the evil effects of the drug are manifested when the dose is too high. It was found that rabbits behaved very differently to the same doses given hypodermically or by the gastric tube, and at different times. By the first experiments animals given doses of 15 to 25 grains showed little effect of the drug, probably because it was given on a full stomach. When the same dose was given in a warm watery solution subcutaneously, the symptoms produced were much more pronounced. It was found that antifebrin dissolved in the proportion of fifteen grains to two ounces of water at a temperature of 102.2° F.; and in twenty or thirty minutes after this quantity was injected under the skin of the back the reflexes of the lower extremities were impaired, tremors began which in the course of the next half-hour became periodic convulsive movements, which extended over the whole body. The blood-vessels of the ear were markedly contracted; the retinal vessels were not hyperæmic; the respiration was superficial and frequent. In ninety minutes after the intoxication was established all reflexes were abolished, the last being the corneal reflex. The bodily temperature sank, in spite of all possible means to maintain it, to 84° F.; respiratory movements only persisted. In spite of these profound disturbances the rabbit recovered in ten to twelve hours; the temperature remained several degrees below the normal for several days. If the subcutaneous dose was raised above 12 grains for each two and one-half pounds of body-weight, the reflexes were abolished in five or ten minutes. Respiration was at first very frequent, then irregular, superficial, at times ceasing entirely. Motor reflexes were entirely wanting; retention of urine occurred; in from sixty to ninety minutes coma, a marked fall of temperature, and general paralysis preceded death. Arti-

ficial respiration could not prevent the paralysis of the respiratory centre. Post-mortem examination showed the bladder distended with urine; the heart had ceased to beat in diastole. If the animals lived longer and continued to take the drug, fatty degeneration of the heart, liver, and kidneys occurred. Sections of the liver, treated by ammonium sulphate, or by ferrocyanide of potassium and hydrochloric acid, showed no reaction for iron.

The blood of the animals experimented on appeared, after one or two hours, to be greatly altered. Macroscopically it was reddish black; spectroscopically it gave a doubtful methæmoglobin line. With the symptoms which preceded death there went hand in hand a marked diminution in the oxygen of the blood. Under the microscope the red corpuscles were seen not in their usual *rouleaux* form, but thinned, somewhat granular, not adhering as normally. Their number was not greatly altered. The number of white corpuscles was somewhat reduced in the first stages of the effects of the drug; in the later stages increased. The hæmoglobin contained in the blood of animals experimented on was reduced from ten to eighteen per cent., and even more when the use of the drug was continued. In the blood of dogs especially, to which antifebrin was given continuously in large doses, a variable quantity of dissolved coloring-matter was found in the blood serum. A test of the reaction of the blood showed a diminution in its alkalescence. The first urine voided after the intoxication was established was acid, neutral, or rarely alkaline, dark brownish yellow, with a yellowish foam. In three cases a small amount of albumen, which could not be ascribed to the drug, was present. Teichmann's crystals were produced by salt and acetic acid, showing the presence of coloring-matter from the blood. Aniline and fuchsine tests were negative. Spectroscopic and chemical tests showed an abundance of bile coloring-matter. A minute quantity only of sugar was present. These experiments showed a profound alteration of the blood, which deranged the normal automatism of the medulla and depressed the functional activity of the spinal cord. The peripheral nerves were also affected, and aniline was doubtless separated in the organism. It is thus proven that the symptoms of aniline-poisoning and those of antifebrin (acetanilide) are identical, except in the fact that by the direct exhibition of large amounts of aniline a greater or less number of red corpuscles

are destroyed, while antifebrin produces much less alteration in the blood. Experiments have shown that an alkaline aniline solution of six-tenths per cent. destroys red blood-corpuscles in dilution of 1 to 7000 or 8000 blood, leaving only the stroma. An experiment upon an animal tetanized by strychnine showed the paralyzing power of aniline. Antifebrin produces no more marked convulsions, while aniline, in large doses, has this effect. Electrical examination of sensibility showed a less diminution after antifebrin than aniline, but the same effect produced by both. As an anodyne, the writer has used antifebrin in fifty-one cases, in thirty-nine of which satisfactory effects were produced; in twelve no result was obtained. In neuralgias of various nerves, central and peripheral, and produced by different causes, the results were excellent. Among the cases were four of facial, three of muscular, one of intercostal, and one of otalgic neuralgia. In severe pain produced by powerful irritation of sensitive nerves, as by cutaneous or subcutaneous inflammation (as ostitis, periostitis, operation wounds, caries, etc.), where the pain radiated in various directions, antifebrin was an excellent anodyne. In hemicrania and headache whose cause was intra-cranial, the drug was especially successful. This was seen in cases where bromides, caffeine, quinine, and antipyrin had failed of effect. In insomnia, general nervous irritation occurring after operations, or long continued, severely painful illness, antifebrin was an excellent sedative; its effect was to lessen markedly the general irritability of the nervous system. This influence was generally manifested in twenty or thirty minutes after taking the drug, sometimes in an hour: the duration of the effect varied according to circumstances. Individual idiosyncrasy was often observed; in anæmic persons the effects were produced by small doses. In giving the drug it is best to begin with small doses,—with women from 5 to 6 grains, with men from 6 to 8 grains, and repeat these doses in an hour. In anæmic patients not more than thirty to thirty-eight grains in twenty-four hours should be given, and the administration should be discontinued at intervals. In healthy individuals the effect of the drug is very marked. Its continued administration results in an aniline cachexia, and after continued administration for four or six weeks of thirty to forty-five grains daily the decomposition and dissolution of the coloring-matter of the blood was markedly felt. Aniline and its salts have a powerful effect upon temperature. In seven

cases of erysipelas, phlegmon, and septicæmia, with small doses, increasing to doses of 2 grains of aniline, a fall of temperature of from 2° to 3° C. was observed, and generally without cyanosis and other ill effects. As after antifebrin, the lowest temperature, pulse, and respiration rate was observed in three or four hours after administration, while the following rise of temperature, without chill, occurred in five or six hours. The doses which produced these effects in fever patients produced no effect on the temperature, pulse, or respiration of healthy persons. Sulphate of aniline and camphorated aniline also possess antipyretic power, and have also been used in doses of 3 and 4 grains in convulsions.

THE ACTION OF QUININE AND ALLIED SUBSTANCES ON CONTRACTILE TISSUE.

The following is a summary of an elaborate article with the above title, published by DR. R. B. WILD in the *British Medical Journal* for September 3, 1887:

Quinine acts essentially in the same manner on all forms of contractile tissue. In small doses it stimulates, as shown in the heart, the increased height of contraction of voluntary muscle, and the initial contraction of the vessels.

In larger doses, or after longer action of small doses, it completely paralyzes the contractile power of the tissue; this is seen in the arrest of amœboid movement, the cessation of response to stimuli in voluntary muscle, the stopping of the heart in diastole, and the dilatation of the vessels.

In very large doses, or after very prolonged action, quinine causes contractile tissues to pass into a state of rigor mortis, as shown by the small spherical condition of leucocytes, the rigidity of voluntary muscle, the contracted state of the heart, the secondary contraction of the vessels after long exposure to the poison, and the contracted state of the œsophagus.

Voluntary muscle (that is, the tissue in which contractility is developed to its greatest extent) was most susceptible to the action of quinine, and was thrown into rigor mortis by solutions which produce paralysis only of the less specialized tissues; with strong solutions (for example, 1 to 1000) voluntary muscle passes into rigor mortis so rapidly that the period of paralysis is abolished, and the tissue, after a short period of increased contraction, passes directly into a rigid and contracted condition.

Dr. Wild has found cinchonine to act like

weaker solutions of quinine; cinchonidine had a similar but more powerful action on voluntary muscle than quinine; quinidine, on the other hand, acted as a direct depressant, the muscle dying with great rapidity.

THE EARLY SIGNS OF LOCOMOTOR ATAXY.

DR. MAX KARGER has published as a graduation dissertation in the University of Berlin an account of a number of observations made on one hundred and seventeen cases of locomotor ataxy in Professor Mendel's clinic, with the view of detecting the early symptoms of this disease; for, as he says, the great hope of a really rational and satisfactory method of treatment lies in the recognition of the existence of the disease in its earliest stages. The history given by the patients established a connection between syphilis and locomotor ataxy in fifty-three per cent. of the cases. In the earlier stages he found symptoms affecting sensation, lancinating pains, numbness, especially of the lower extremities, cord-like sensation round the waist, retardation of the rate of conduction of sensations, and, what he looks upon as especially important, being almost always present, the so-called Romberg's symptom,—i.e., the inability or great difficulty of balancing the body when the feet are placed parallel and close together, the eyes being shut,—which, however, he does not consider is due to the ataxy, but thinks it is an abnormal condition of sensation. With regard to ophthalmic symptoms, he finds that at the commencement of locomotor ataxy there is a diminution in the acuteness of vision and a concentric contraction of the field, amblyopia and amaurosis, which were due in thirty-five per cent. of the cases to atrophy of the optic nerve. Then there were slight and transitory paralyses of the eye-muscles. Insensibility of the pupil to light was found in sixty-six per cent. of the cases, and was due sometimes to a paralyzed condition of the sphincter and sometimes to disturbances of reflex action. With reference to the patellar reflex, the author thinks it has been considered to be absent rather too universally. He found it in eight of his one hundred and seventeen cases. The bladder reflex was often diminished, so that chronic vesical disease, the cause of which is not to be made out, ought to lead a medical man to think of tabes. Impotence was much more common than any increased sexual reflex. Very rarely gastric and cephalic "crises" and joint-affections were noted.

The author suggests that complaints of a vague nature, such as nervous pains, eye- or bladder-troubles, should lead the physician to make a thorough examination with special reference to the want of patellar reflex, Romberg's symptom, and the want of reaction of the pupil, as these objective signs do not necessarily give rise to any subjective symptoms.—*Lancet*, August 20, 1887.

ANTIPYRIN IN LUMBAGO.

The Paris correspondent of the *British Medical Journal* for September 3, 1887, relates a remarkable case of cure of lumbago by subcutaneous injection of antipyrin, observed in a man, aged 42, a patient at the Hôtel Dieu. He could not sit down, and once in bed could not sit up. The lumbago was rheumatismal, for his fingers and toes were also swollen. After a first subcutaneous injection of 50 centigrammes ($7\frac{1}{2}$ grs.) of antipyrin, the lumbago completely disappeared. The injection of 50 centigrammes of antipyrin was continued every morning and evening, and at the same time 3 grammes (45 grs.) were administered by the stomach. The action upon the fingers and toes, although not immediate, was very rapid. The man is now perfectly cured.

THERAPEUTICAL VALUE OF THE MORE RECENT ADDITIONS TO THE GENITO-URINARY PHARMACOPŒIA.

MR. E. HURRY FENWICK gives the following summary of the action of a number of new drugs in the treatment of genito-urinary diseases (*Lancet*, September 24, 1887).

Kola (*Sterculia acuminata*).—A powerful stimulant; contains 2.3 per cent. of caffeine, also theobromine. In the form of chocolate this drug promises to be of great value in tertiary syphilis, where large doses of potassium iodide have to be administered. The cases of syphilis in which the chocolate was first tried were often of the worst and most neglected type, being drawn from the neighborhood of the London Docks. Later work has proved its value in the well-fed. Patients were able to take doses of 30 grains to 60 grains of the iodide without inconvenience as long as the kola was administered with it. It is now prepared in the form of a paste,—“kolatina,”—like cocoa paste, as it is found more effective in the liquid form. From 1 drachm to 2 drachms makes a breakfastcupful; where this is inconvenient, the stick

kola-chocolate is eaten. Dose, 1 drachm to 2 drachms.

Salix niger (Black Willow).—A sexual sedative of decided value; useful in ovarian hyperæsthesia, also in prostaticorrhœa, spermatorrhœa, excessive seminal emissions, and enforced continence. In the latter disorders its action is good, but inferior to potassium bromide. This is, however, somewhat counterbalanced by its non-depressant qualities. Dose, $\frac{1}{2}$ drachm to 1 drachm. Finding it of value in those wearisome cases of urethral neuralgias following gonorrhœa, Mr. Fenwick began to substitute sodium salicylate for it, and was impressed by the relief the latter afforded. In cases of urethral pain in the adult, he first eliminates stone, stricture, urethral granulations, and over-acid urine, and then prescribes sodium salicylate (5 grains to 8 grains), with a gratifying result.

Lycopodium clavatum.—The tincture is of real value in frequent micturition, irritable bladder, and cystospasmus, where such is not dependent upon actual disease or foreign body. It has been found useful in spasmodic retention of children. Dose, 15 minims to 1 drachm. Note: White lycopodium is an inferior substitute, but still of some value. Dose, $\frac{1}{2}$ drachm to 1 drachm, between bread and butter. Yellow lycopodium is useless.

Kava Kava (Piper methysticum).—This drug is of benefit in pyelitis, cystitis (acute or chronic), and urethritis. It is inferior to copaiba and sandal oil, but much more pleasant to take. It is of value when the oils are not tolerated. The inflammation seems to be increased at first. Fluid extract, $\frac{1}{2}$ drachm to 1 drachm on a full stomach.

Stigmata maidis (Corn Silk).—Difficult to obtain at certain seasons, but of great value in pyelitis and renal colic. One case is especially worthy of notice. A patient who had suffered from renal colic and pyelitis for seventeen years was admitted into the hospital for exploration of the kidney. The patient was so relieved with corn silk that he refused operative interference. It is also of value in chronic or subacute cystitis, but in the writer's hands it has failed in acute cystitis. Note: The fresh infusion is the best; dose, a wineglassful. Failing this, use the extract; dose, $\frac{1}{2}$ drachm to 1 drachm.

Papaw, Papyotin, Papaine (Carica papaya).—Of marked benefit in syphilitic ulcers of the tongue and throat, especially when mixed with cocaine. The surface of the ulcers and the white patches (secondary syphilis) rapidly clean and begin to skin over. Loz-

enges have been made which are most useful (papaine, $\frac{1}{8}$ gr.; cocaine, $\frac{1}{8}$ gr.; potass. bicarb., $\frac{1}{4}$ gr.). In a girl of 7, with severe syphilis of the mouth (after direct inoculation), the ulceration had resisted all applications for eight or nine months, and the child had wasted considerably. A few of these lozenges produced a marked effect, the ulcers healed, and the child rapidly fattened. Mix papaine with a small quantity of glycerin and water, so as to form a thin paste, add a little bicarbonate of potassium, and brush ulcers with the same thrice daily. Whatever its position may be as a digestive ferment, papaine is worthy of trial as a preventive and reducer (?) of renal calculi. Dose for renal stone, 1 grain to 3 grains, or more, in pill or powder; to be taken with meals.

Picht (Fabiana imbricata).—Of undoubted value in lithiasis and renal stone. One patient obtained so much relief from the hæmaturia and pain that he obtained the plant direct from Peru every mail, and made the infusion himself. In Mr. Fenwick's hands it has failed in chronic cystitis. Dose, fluid extract, $\frac{1}{2}$ drachm to 1 drachm; infusion, a wineglassful.

Cocaine.—The fresh work with this drug is to be brought before the Medical Society. Routine work: Lithotripsy in the feeble was performed with a four per cent. solution; small stones in the adult with a twenty per cent. solution. Internal urethrotomy needs a solution of twenty per cent., and any vesico-urethral instrumentation one of from four to twenty per cent.

Naphthaline (C₁₀H₈).—A derivative of benzol and allied to phenol. Given with benefit in fetid urine. The micrococci speedily disappear, and the urine becomes sweet. The large doses recommended (15 grains) are unnecessary, and produce vomiting and abdominal pain. Dose, 3 grains, cautiously increased. Note: Urine of patients taking naphthaline smells of phenol, and may remain exposed for some days without change.

Pine or Spruce Extract (Abies excelsa).—Has a slight diuretic action, and relieves renal pain unconnected with calculus. It is of use also in a bath, and as a liniment in gonorrhœal rheumatism. It is a pleasant vehicle for drugs in pyelitis and cystitis. Has proved of benefit in gleet. Dose, 1 drachm in water.

Ulexine (Ulex Europæus).—"A more powerful diuretic than sparteine or preparations of *Sarothamnus scoparius*" (Gerrard). This is to be employed with caution in stricture. One patient with stricture of old standing, after taking a pill containing $\frac{1}{16}$ grain, had

temporary suppression of urine, vomiting, and fever.

Strophanthus (Kombé).—Mr. Fenwick believes there is a distinct future before caffeine, digitaline, and strophanthus as adjuvants to operations upon the vesico-urethral tract. We have sometimes to deal with partial or complete temporary suppression, and sometimes with rigors after operative interference or even instrumentation. Caffeine seems indicated to avert the former; strophanthus the latter. Again, if we have reason to anticipate sudden flooding of the renal vessels, and consequent urinary fever as the result of an operation, then digitaline, from its power of controlling the renal circulation, is indicated. Our treatment, however, on these lines must go *pari passu* with our oncometric knowledge of drugs which affect the kidney circulation or the abdominal blood-pressure. The author believes strophanthus has power, worthy of further investigation, in controlling rigors. He employed it on the theoretical grounds that it increases cardiac power and general blood-pressure. Five in-patients, suffering from violent rigors after instrumentation, were treated with the tincture in doses of 5 minims after catheterization. In no instance were rigors induced.

Chaulmoogra Oil (Oleum gynocardiæ).—Of value as a liniment in gonorrhœal rheumatism, osteocopic pain of syphilis. Its power is increased if it is mixed with lanoline. It has great influence upon some forms of adenitis, also in secondary syphilis. Dose, 5 minims to 10 minims, on a full stomach.

Hydrastis Canadensis (Golden Seal).—Of some use as an astringent vesico-urethral injection, checking mucous discharge; worthy of trial in some forms of prostatic engorgement and enlargement. Dose, 10 minims.

Damiana (Turnera aphrodisiaca).—Good in some cases of diminished sexual power, where such does not depend upon organic disease. Often of use in melancholia and depression, if of genito-urinary origin.

Caroba (Jacaranda tomentosa).—Of some value in secondary and tertiary stages of syphilis. Dose, 1 drachm.

ANEMONIN.

Anemonin, the active principle of *Anemone pulsatilla*, is stated by M. P. VIGIER (*Journ. de Pharm.*, p. 99) not to possess the active properties of the fresh plant, which he believes are due to an essential oil, since the distilled water made from the fresh plant is extremely acrid,

causing symptoms of severe coryza, but in a short time becomes turbid, loses its acidity, and deposits anemonin. The anemonin, $C_{11}H_{11}O_6$, therefore, he believes to be formed by the oxidation of the essential oil. Anemonic acid, which contains one equivalent more of oxygen, is formed when anemonin is dissolved in an alkaline solution. It may be remarked that M. Vigier does not appear to be acquainted with the paper on this subject by Dr. Beckurts (*Pharm. Journ.*, 3, xvi. 365), in which the acidity of a freshly-prepared distillate is attributed to "anemone camphor," an unstable compound, which, in contact with water, undergoes decomposition into anemonin and anemonic acid. M. Vigier attributes the ready absorption of anemonin by the stomach to the fact that it is really soluble without alteration in hydrochloric acid (although it is rapidly destroyed by nitric and sulphuric acids). He does not think it is so poisonous as is generally supposed, having himself frequently taken 10 centigrammes without any poisonous effects. Yet, in doses of 2 to 4 centigrammes per day, its anti-catarrhal effects and its action on the nervous system are manifested. In consequence of the high price of anemonin he recommends the tincture of the fresh root to be used, made of equal weights of the fresh root and alcohol of ninety per cent., the dose being 2 to 4 grammes per day. If a tincture of the leaves be preferred, it is made of the same strength, but the leaves being less active than the root, the dose is given from 5 to 10 grammes daily. —*The Pharmaceutical Journal and Transactions*, August 27, 1887.

SCLEROSIS OF THE HEART.

According to HUCHARD the causes of sclerosis of the arteries of the heart may be divided into three groups: the first being due to intoxications, or rather toxæmia, by alcohol, tobacco, malaria, and lead; the second group is formed of causes such as the diathetic states of arthritism, gout, and syphilis; while the last group, and one to which exception may with at least some reason be taken, is composed of causes such as physical, moral, and intellectual over-pressure. The sclerosed heart may be either hypertrophied or dilated, but most often dilatation and hypertrophy are associated. Modifications of the form and size of the heart are the direct consequences of the initial vascular lesion and not of the ensuing sclerosis. The common lesion is obliterating arteritis of the

small coronary vessels, and it takes place slowly, so as to allow of time for compensating hypertrophy and for sclerotic lesions to develop. If the arteritis is of more rapid progress, dilatation of the heart and alterations of the heart-muscle fibres are the preponderant changes. Three histological varieties of cardiac sclerosis may be differentiated, following Weber: (1) peri-vascular sclerosis due to the propagation of inflammation; (2) the dystrophic sclerosis from regional ischæmia; and (3) mixed sclerosis. The changes in the muscle fibres are but imperfectly known. Two of the principal alterations are simple atrophy and the vitreous degeneration of Zenker. Nosographically, cardiac sclerosis is one of the anatomical expressions of arteriosclerosis of the heart. Weber regards arteriosclerosis as the outcome of certain etiological conditions, among which must be ranged heredity, certain hygienic habits, and various chronic intoxications.—*Lancet*, September 24, 1887.

ANDROMEDOTOXIN.

The investigation of Professor Plugge, to which reference has been made on more than one occasion, has shown that andromedotoxin is not only the toxic principle of the *Andromeda*s, but probably also of all the poisonous ericaceous plants. This compound has now been prepared in considerable quantity from the *Rhododendron ponticum* by HERR DE ZAAVER, who has further investigated its properties (*Chem. Zeit.*, July 31, p. 183). He reports that pure andromedotoxin occurs in white, delicate, crystalline needles, melting at 228° to 229° C., with signs of incipient decomposition, but bearing a temperature of 100° C. for a long time without alteration. The compound is soluble in alcohol, amylic alcohol, chloroform, ether, and benzol, and three times more soluble in cold than in boiling water. It shows the peculiarity that its solutions in water, alcohol, and amylic alcohol are lævogyre, whilst a chloroformic solution is dextrogyre. Andromedotoxin belongs to the class of indifferent bodies; its solutions in different liquids have an alkaline reaction, but it is not precipitated by any of the alkaloidal reagents, nor by the solutions of metallic salts, neither does it reduce Fehling's solution. Strong sulphuric acid gradually dissolves it with a brown color, but if heated on a water-bath with dilute sulphuric acid it assumes a beautiful rose color. Dilute hydrochloric and dilute phosphoric acid affect it similarly, the color being more violet-red with

the former, and mulberry-red with the latter; the reaction taking place in each case with a very minute quantity. The composition of the pure substance is most simply expressed by the formula $C_{61}H_{51}O_{10}$.—*The Pharmaceutical Journal and Transactions*, August 27, 1887.

THIRIAR ON WOUNDS OF THE PALMAR ARCHES.

DR. THIRIAR, taking as his text the case of a man who had been unsuccessfully treated both by a pharmacist and a surgeon for a wound in the hand, which, when he was brought into hospital, was both bleeding and suppurating, gave recently an instructive clinical lecture to the Brussels students on the management of wounds of the palmar arches. He pointed out that there is, from a clinical point of view, a distinction to be drawn between these and other wounds of the palm which implicate only the collateral branches, a distinction which is not clearly stated in surgical works which students read. The latter class of wounds present no difficulty, and the hemorrhage from them can be easily arrested. Not so, however, with the wounds of the palmar arches. Here, of course, the obvious indication is to search for the two ends and tie them. In consequence, however, of the tendency of the artery to retract, it is frequently impossible to find these ends without an amount of dissection which is undesirable. Perchloride of iron and other styptics hardly ever succeed, and they are to be avoided on account of the effect they produce on the surrounding tissues. The actual cautery is somewhat better, if not too highly heated, but even this very frequently fails. Even if success results, it is usually only temporary, for the muscular coat of the artery is apt, as Dolbeau pointed out, to relax after a time, and permit hemorrhage to break out afresh, in spite of any clots which may have formed. Similarly direct compression is seldom permanently successful. Compression of the ulnar and radial, forced flexion, and forced extension may be used as temporary expedients, for example, on the field of battle. Vanzetti's method of keeping the lips of the wound widely apart by means of hooks and that of forcipressure is not satisfactory, and Dr. Thiriard recommends that no time should be lost in trying cones of charpie and starch, elastic balls or sponges. The safest and best plan is to ligature in the wound if possible;

if not, above it. In recent cases it can usually be done in the wound. Where it is necessary to tie higher up, it is of no use to tie the ulnar and radial; and if the wound is not very recent, and there has been time for a considerable amount of collateral circulation to have developed, even the brachial must be tied above the profunda. It is necessary to remember that the axillary artery sometimes gives off two brachial branches as high as the axilla itself. M. Thiriar examined a large number of arms in the dead-house when he was in charge of the post-mortems, and found this anomaly present in twelve per cent. of the cases. However, he has always succeeded in arresting hemorrhage in wounds of the palmar arches, even when the tissues were suppurating, by a modification of Sir J. Simpson's plan of acupressure. He uses needles curved to a semicircle, and, passing them under the artery, brings the edges of the wound together and occludes the vessel by the application of a twisted suture, which there is no need to draw very tightly. He summarizes his advice thus: 1. Direct ligature. If impossible,—2. Twisted suture and acupressure. If unsuccessful,—3. Ligature of humeral in the middle, if the collateral circulation has not had time to develop; above the profunda if it has. 4. Employment of compression, direct or indirect, forced flexion, forcipressure, styptics, etc., only as temporary expedients.—*Lancet*, October 1, 1887.

AMMONIUM BORATE AND ZINC CYANIDE.

The latest remedy in vogue for the treatment of phthisis appears to be borate of ammonium, which has been found by PROFESSOR LASHKEVICH of great value, producing a marked effect on the expectoration, and in some cases diminishing pyrexia in the early stages of disease. The dose given was 5 grains three times a day, combined with codeine, henbane, or other sedatives.

The same authority has found in cyanide of zinc a remedy which exerts a beneficial effect on some cardiac cases, such as cannot be obtained by other means, particularly in cardiac neuroses, in which it acts quickly and certainly. Palpitation, want of rhythm, and pain in the region of the heart are quickly relieved and sometimes cured. The dose given varies from $\frac{1}{10}$ to $\frac{1}{2}$ of a grain three times a day.—*The Pharmaceutical Journal and Transactions*, August 27, 1887.

ETHER INHALATION IN TETANUS NEONATORUM.

DR. DEGHILAGE, of Mons, in Belgium, having a case of trismus neonatorum, and having repeatedly given chloral and ether per rectum without producing any effect, the child rapidly becoming worse and seeming in imminent danger of death by asphyxia, determined to administer ether by inhalation. In addition to this, artificial respiration was employed from time to time by means of a tube inserted into the nostrils. Some pieces of Rigollot's mustard-leaves were also applied to the chest. The child was laid on its side, according to a suggestion made by Marion Sims. The result of this treatment was that in a few hours the little patient's condition had improved to a very marked degree. The next day profuse perspiration occurred and the spasms entirely ceased. Shortly after this the child was convalescent.—*Lancet*, September 24, 1887.

TREATMENT OF GALL-STONES.

DR. SAMUEL MORALES PEREIRA, of Puebla, Mexico, gives an account in a Mexican medical journal of a case of "biliary calculus diathesis," with enlargement of the gall-bladder, in which he found a decoction of a well-known fern, *Asplenium ceterach* (or *doradilla*, as it is called in Spanish), of great value. The patient was a gentleman of good general constitution, who had suffered for a long time from pain of a more or less periodical character in the hepatic region. His digestion and his temper were considerably affected. He had applied to a number of medical men, but had never derived any benefit from their treatment. On examination the right hypochondrium was found to measure six centimetres more than the left, the region of the gall-bladder being distinctly enlarged and tender to the touch. The hepatic dulness in the axillary line was of normal breadth, but it extended five or six centimetres beyond the normal in a downward direction in the mammary line. On changing the patient's position, no alteration in the situation of this abnormal dulness could be detected. The patient, on being asked, said that his urine deposited a red sediment, and that he had at times passed calculi with his stools. Dr. Pereira, having had experience of the good effects of *ceterach* in gravel and urinary calculus, and believing that it exerts an influence

in "calculous diathesis," decided to employ it in this case. A decoction of half a drachm of the plant in five ounces of water was ordered four times a day. During the first twenty days no effect was observed. By the end of another twenty days the symptoms of mental irritability had disappeared, and the pain in the hepatic region had very greatly diminished. In fifteen days more the tumor in the region of the gall-bladder had become much less perceptible. The patient had been kept on milk and broth, which he did not at all like. He had passed three gall-stones and some gravelly matter with his stools, there having been some severe hepatic pain.

After this the patient continued to improve, though it was not easy to convince him that he was doing so. The amount of ceterach was diminished, and capsules of taurin prescribed, belladonna frictions being also applied to the hepatic region. He passed a succession of gall-stones, and the whole of the abnormal physical signs as well as the subjective symptoms passed away. Dr. Pereira hazards a suggestion that ceterach may have some effect on calculi already formed, as well as on the "calculous diathesis." He remembers being struck with the appearance of a stone—he does not say of what kind—which he saw removed from a young man's bladder, and which, though hard in some parts, was so friable in others that it could be broken down with the fingers. On questioning the patient, it was found that he had for some time taken ceterach by the advice of an old native medicine-man, and that while he was doing so he had remarked that he passed more urine, and that it contained gravel. The pain, however, did not diminish, and so he lost faith in the treatment and gave it up. It is to be remarked that the use of ceterach in urinary calculi is by no means new. Dr. Pereira does not explain what relationship he supposes to exist between the "calculous diathesis" which leads to urinary calculi and that which produces gall-stones, or why a remedy which is useful in one case should be prescribed in the other; still his facts, such as they are, are worth noting, and they seem to have interested the members of the Mexican Academy of Medicine, before whom they were brought, and who had the opportunity of examining the various gall-stones and gravelly matter passed with the fæces, as well as the partly friable vesical calculus upon which Dr. Pereira's suggestions were in part based.—*Lancet*, October 1, 1887.

COLD AFFUSION IN APPARENT DEATH FROM LIGHTNING.

DR. HIDALGO, of Mexico, brought before the Academy of Medicine of that city, at a recent meeting, the case of a man who was struck by lightning, and was at first thought to be dead, but who, after having had, at the suggestion of a passer-by, a large quantity of cold water thrown over him, began to show signs of vitality. He did not at first receive any medical treatment, so that the early history of the case had to be obtained from the relatives. After being brought home, water was still poured over him until he spoke for the first time, saying he was cold, and begging that this treatment might be stopped. He was then put to bed. During the night he did not sleep, but kept talking in a delirious manner, and complaining of pain, especially in the head. When asked what was the matter, he said at one time that he had something the matter with his chest, and at another that he had rheumatism all over, but he made no reference to the lightning. Dr. Hidalgo saw him the next day and found him in a semi-comatose state. The pulse was 75, full and compressible, the temperature normal, the respiration rather rapid. He was so deaf that he could only be made to open his eyes by shouting close to his ear. The pupils were contracted. He complained of pain all over, but especially in the head and arms. He had passed three badly-smelling liquid stools during the night. He was neither hungry nor thirsty. The electric spark had entered the upper part of the right parietal region just behind the auricle. The scalp was burned over a surface of about four by five centimetres, and a spot of dried blood was seen on the upper part of the auricle. The right side of the neck was reddened as by a burn of the first degree; below this, as far as the umbilicus, the effects were equal to those of a burn of the second degree, of the width of about fifteen centimetres at most, but very irregular in its dimensions. The electric fluid had passed down the inner aspect of the right leg, producing a burn of the second degree. It had then passed down to the foot, where the burn was of the first degree, and the strip of skin affected much narrower than above. The hat, coat, and trousers were injured—as if torn—all along the course of the current, but they were not burnt in any part. The patient was treated with sedatives and some clysters, and in sixteen days was perfectly well. Dr. Hidalgo supposes that the pneumogastric was affected by the shock, which paralyzed the respiration, and subse-

quently the heart's action, similarly to the behavior of an overdose of chloroform. The indication, therefore, was to re-establish the respiration, and this was admirably fulfilled by the cold affusion, which fortunately was administered quickly, before the paralysis of the heart had become absolute.—*Lancet*, October 1, 1887.

THE USE OF SALICYLIC ACID IN THE TREATMENT OF SCURVY.

MR. ALEXANDER FAULKNER calls attention, in the *Indian Medical Gazette* for July, 1887, to the efficacy of salicylic acid in the treatment of scurvy, stating that the advantages which resulted from its administration have been so marked as to warrant the hope that others would give this drug a fair trial. In no case in which he employed it were any untoward consequences noted, though the cases in which it was used were free from any renal or hepatic complications,—conditions which, if present, are supposed to be indications for the non-administration of the drug. As the elimination is not rapid, and congestion of the kidney or liver certainly in a great measure retards its excretion, it is evident that caution must be observed in prescribing this drug, and it should not be given in any case suffering from renal or hepatic complications. As a preliminary precaution Mr. Faulkner recommends the analysis of the urine and the avoidance of the use of this drug in the aged or the very young. He reports a case of scurvy in which this treatment was used with success.

CARBOLIZED OIL IN SCARLET FEVER.

In a paper by MR. JOHN BROWN, medical officer of health of the borough of Bacup, testimony is borne as to the prophylactic advantages attending the early and continued inunction of carbolized oil in cases of scarlet fever. The carbolized oil used contains five per cent. of the pure carbolic acid, and, as soon as the rash is out, this is applied over the whole body except the face, for which olive oil is used. The inunction is repeated twice a day, with a warm bath every night, and the treatment is continued until the sixth week, by which time it may be expected that the desquamation of the skin is complete, and the patient therefore no longer capable of conveying the infection.—*The Pharmaceutical Journal and Transactions*, August 27, 1887.

Reviews.

SPINAL IRRITATION (POSTERIOR SPINAL ANÆMIA).

By William A. Hammond, M.D.

Detroit, Mich.: Geo. S. Davis, 1886.

Every practitioner in American cities must have seen large numbers of instances of that group of medical cases which form the subject of the little brochure before us. The acknowledgment of the existence of this class of cases does not, however, of necessity involve the recognition of spinal irritation so called as a distinct disease; and the assertion of Dr. Hammond on page 19 must be set down to ill nature or lack of tolerance rather than to inherent truthfulness. Such persons must necessarily belong to one or the other of the following categories: their experience must have been very limited, and therefore they cannot see, or they must have been endowed either with restricted powers of observation or with minds so constituted as to cause them wilfully to close their eyes to the facts that they did not care to see. The question is, whether this so-called disease is not simply a form of hysterical disorder, belonging to the hyperæsthesia and anæsthesia so common in hysterical persons. The symptoms certainly occur, especially in neurotic, hysterical women, and often develop and disappear with a suddenness so characteristic of hysterical accidents. The writer once had an opportunity to watch a case of so-called spinal irritation of the most severe type. The hyperæsthesia was so excessive that the mere touch of a camel's-hair brush upon the back would cause the patient to fall, and he has frequently seen the unfortunate woman lie in an almost syncopal condition for days as the result of some one having brushed against her in passing; and yet this same case, after being fifteen or twenty years confined to the room, recovered in a few days under the influence of the so-called faith-cure. The well-known views in regard to the pathology of the disorder, viz., that it is the anæmia of the posterior columns of the spinal cord, are reiterated in this little book, and supported with all the ingenuity that the author is capable of. The frame of mind in which he approaches the subject is well set forth in the following sentence, which we take from page 53: "It is better to do this, even if the view we enunciate is not absolutely sufficient to account for all the observed phenomena, than to shut up our opinions in our own minds, or, worse still, form none whatever." It is exactly this frame of mind which,

to our thinking, is one of the great drawbacks to modern medicine. When there are no sufficient grounds for forming a theory, it is much better for the mind to rest, and to acknowledge the truth of the facts of the case, and its inability to account for them, rather than to commit itself to some baseless and implausible theory. Careful consideration of the reasons assigned by Dr. Hammond for his belief that this spinal irritation is due to spinal anæmia does not bring to our mind any conviction whatever of the truth of the theory. Most of these reasons are exceedingly trivial. Some of them, indeed, tell very strongly against his belief. He states very decisively that a large blister applied over the tender part of the spine affords prompt and complete relief. Whatever knowledge we have of the action in blisters, all tends to show they are useful, not in increasing the flow of blood in the distant affected organ, but in withdrawing the excess of blood. The treatment of spinal irritation, as given by Dr. Hammond, is exactly that, of a hysterical state, excepting in regards to counter-irritation, and in the great majority of cases such severe measures seem unnecessary and barbarous. The effect of what we may call the credulous mental condition of physicians is nicely illustrated by a statement made by Dr. Hammond that an application of water as hot as can be borne, as a general thing, increases the flow of blood to the spinal vessels. This bold, absolute assertion rests really upon not a single grain of evidence. Hot applications bring relief in some cases of spinal irritation, spinal irritation being due to anæmia. Therefore hot applications increase the flow of blood in the spinal vessels, therefore spinal irritation is due to anæmia. This reasoning in a circle is an epitome of the whole of the book.

MESSAGE AS A MODE OF TREATMENT. By William Murrell, M.D., F.R.C.P.

Philadelphia: P. Blakiston, Son & Co., 1012 Walnut Street, 1887.

This is a well-written plea for massage as a means of treating various diseases. We fear that its influence for good will be marred by the tendency that is shown to overstate the value of the method of treatment. There can be no doubt that massage is a most important remedy in the hands of one who knows how to use it; but, after considerable experience, we are convinced that it will not do all that is claimed for it by Dr. Murrell. Speaking of poliomyelitis he says, "By systematic massage

an improvement is speedily effected," and he continues in such a strain as would lead the unwary reader to the conclusion that almost all cases of poliomyelitis are curable by this means. Assuredly this is not correct. All that massage can do in such cases is to maintain the integrity of the muscles, as far as may be, and, if the cells in the spinal cord have a tendency to recuperate themselves, aid in the final return to health. There is no reason to believe that the massage has any direct influence upon the diseased spinal cells, and in the vast majority of cases its most persistent use must end in failure. Then, again, we are told not only that massage is useful in Landys (*sic*) paralysis, but such language is employed as to lead to the direct inference that if massage be employed recovery will take place; for it is said the paralysis in *untreated* cases usually progresses upwards until it involves the medulla oblongata, and death ensues. In true Landry's paralysis massage is probably about as powerless as are other remedies. Then, again, massage is recommended in acute chloral poisoning by Dr. Murrell as a means of maintaining the temperature of the body; for such purposes, in comparison with the hot baths, the method is absurdly feeble. We would recommend, if the experience of our author is to be confirmed, middle-aged ladies to the use of massage. In fact, we may expect the rooms of the *masseuse* to be crowded with middle-aged spinsters hopeful of marriage. Great must have been the glee of Dr. Murrell when he reduced the waist of a lady whose age was reputed to be thirty-five "from twenty-five to twenty inches," and made for her an excellent marriage.

A serious error into which Dr. Murrell has fallen is a misunderstanding of what he terms the Weir Mitchell treatment of neurasthenia, —*i.e.*, the so-called rest-cure. He affirms that in it the massage employed is no massage but simply rubbing. There is no truth in this. The rest-cure, as practised in Philadelphia, dates back to the times of Professor Jackson. The immense improvements introduced into the method by Dr. S. Weir Mitchell consist largely in the use of massage, and the massage as practised upon his patient is a true massage, conforming in all respects with the rules which Dr. Murrell first derived from the older German and French writers. We must also disagree with Dr. Murrell in regard to anointing the skin before the use of massage. The reasons he assigns for performing dry rubbing are as follows: 1. You get

better contraction of the muscles, and consequently a greater flow of lymph; 2. Electrical currents are more readily developed in the tissues; 3. There is a greater elevation of temperature in the part; 4. You do not make your patient in a mess. In answer to this—we rarely, if ever, see distinct contractions of the muscles produced by massage; there is no proof of the assertion that electrical currents are more readily developed in the tissues, or that there is greater elevation of temperature in the part, if the tissues and part are understood to represent those which lie beneath the skin; and, if the anointing be properly done, the patient is not left in a mess. The objection to dry massage is that the massage is apt to become a rubbing, and irritation of the skin to be produced rather than an effect upon the deeper-seated tissues. A little sweet cocoanut oil or vaseline placed upon the skin before rubbing is very often of advantage, especially when there is a tendency to irritability of the skin. In conclusion, we may say that the forms of massage as described by Dr. Murrell are those which are employed by all well-trained operators and recommended in the standard works on the subject.

Correspondence.

LONDON.

(From our Special Correspondent.)

We are now in the depths of the dull season here. Everybody is out of town, excepting your faithful correspondent. No hospitals, no societies. Physicians, surgeons, professors, have silently disappeared to the coast, to the mountain, to the continent, some of them to the Congress. If you ask me how can they be spared, these guardians of the public health, I must tell you that their clients have disappeared too. Everybody that can afford a change takes it at this season, and many who can't pay for a change have it provided for them. The annual holiday appears to be a necessity in these days of restlessness and haste; whether a necessity or no, it is a settled institution. It is not pleasantly received by some of our seniors in medicine, who remain true to the traditions of their youth, and rail at the idleness, as they call it, of these degenerate days. These ancient philosophers class the annual holiday with the penny post and the daily paper among the curses of

modern civilization, and we are as likely to give up the one as the others.

But, as you know, some of us combine work with pleasure, and spend part of our precious change at the great scientific gatherings of the year. This time twelve months ago I gave you an account of the meeting of the British Medical Association at Brighton. I have now to chronicle some events and to discuss a few questions in connection with this year's meeting in Dublin, which are of prime interest to us as therapists.

The president of the Section of Pharmacology and Therapeutics on the present occasion was Dr. Whitla, of Belfast. Dr. Whitla is one of the most advanced and generally distinguished pharmacologists in Ireland. He is a man of learning and enthusiasm, and possesses especially the precious gift of indomitable energy. He is just the man who might be expected to attack and to solve the practical problem of purifying and popularizing his special subject with the profession. Others might lament the lack of fervor in treatment with us, as I have myself done more than once in these pages. Dr. Whitla is not content with wringing his hands: he raises his voice, and gives forth words of encouragement and counsel. He proposes a remedy for the backwardness of therapeutics. He formulates a definite plan for at once extending a proper interest in the action and uses of drugs, and increasing steadily and rapidly, as he hopes, our knowledge of these. The amount of opportunity and experience wasted now in this direction is deplorable; as Dr. Whitla says, "The indication at present is not for more new remedies, but for a better and more precise knowledge of those already placed in our hands. It seems as if one of our very greatest barriers to progress is to be found in the ever-increasing number of new drugs, which pour in upon us at a rate which prevents that thorough testing of their qualities and actions so necessary before the range of the new weapons can be accurately determined. A vast field of almost virgin soil lies at our feet: pathology, chemistry, physiology, pharmacology, and pharmacy have brought in their discoveries and enriched the domain of therapeutics, and if we are to reap the benefits we must be up and doing." All this is very true, and it is well put. About the need for reform, about the crude material from which the perfect instrument of cure is to be produced, about the direction whence good must be looked for, if it come at all, there can be little doubt or division of opinion.

But when we proceed to the *method* of reform we are in difficulty. Here a conflict of opinion will begin. In discussing the cure of modern therapeutics, we find that the better treatment of treatment is as obscure and difficult as the better treatment of disease! Dr. Whitla would have the British Medical Association come to the rescue of therapeutics in this country. He reminds us, most fittingly, that we have in this great society a powerful machine, ready to be set in motion. He would have the Association take up two great pieces of work,—first, “the encouragement of a better method of stimulating therapeutic research” among its members; and, second, the making its voice heard in improving and perfecting our national pharmacopœia. These ends and aims are obviously so desirable, and apply so unquestionably to your country as well as ours, that you will be interested to learn the details of Dr. Whitla’s scheme.

First, then, for “the stimulation of therapeutic research” with us. He would have “a portion of the space of the *British Medical Journal* wholly set apart and dedicated to the ventilation of questions relating to the treatment of disease by members of the Association. A small committee, with a good secretary, would be an essential part of the scheme;” for “to permit the remedies or methods of treatment to be selected by the contributors at random would be to remain precisely where we are. The committee would select one or more remedies whose actions in disease are but imperfectly known, and would invite a full and free discussion and investigation of their virtues through the *Journal* upon certain definite lines previously laid down. In a short time from numbers of workers an amount of valuable experience would be readily obtained which otherwise could not be procured during many years of patient individual toil. Thus there would be yielded an abundant harvest of carefully observed and recorded facts, clearing up many doubtful or exposing many unsuspected actions of certain selected drugs in certain selected diseases. These results, with proper sifting and supervision, might soon become the most valuable additions made to the science of medicine in our time. Many men would probably be induced to devote themselves to the close observation of a limited number of remedies when these would be selected for them, and many other men would be induced to give to the world results already obtained during years of practice, which otherwise they never would have thought of publishing.”

Now this proposal of our president sounded all very well at the first hearing, but it bristles with practical difficulties when regarded dispassionately. To my mind the chief obstacle to its successful accomplishment is that it will meet with something more than indifference from all but the few of us who are specially interested in drug treatment and have a voice in the councils of the Association. If medicinal treatment is to be favored with a special portion of the space of the *Journal*, wholly set apart to it, what about surgical treatment? And what about gynecology, that grossly prolific section of medical literature? Have not these departments as good a claim as therapeutics to a column in the *Journal*, with their special committees, each of them, and their secretary, and their selected subjects calling for ventilation? And if treatment be thus favored, why not pathology and public health? It is desirable to sift and to test not only treatment of every kind, but all portions of the science and art of medicine. The editorial in the *Journal* on Dr. Whitla’s address gave but a half-hearted reception to his proposal, and no wonder. His proposal practically amounts to the disintegration of the management of the *Journal*, and the distribution of the fragments under the supervision of a number of co-editor specialists. If this practical difficulty arise (and I confess I cannot see a way out of it), Dr. Whitla’s scheme will be crushed in its inception. I believe we have yet to persuade many of our men of greatest influence in the profession of the paramount importance of medicinal therapeutics. Until this desirable end has been attained, I fear it is idle to look for special favor for our subject in the columns of the medical press. But there is no reason why something like the first portion of Dr. Whitla’s proposal should not be carried out. We might have an organizing and marshalling of our therapeutical forces, and go forth on a kind of system to attack the opposing host of ignorance, indifference, despair, and superstition with respect to the value of drugs. This might or might not be done by or through the British Medical Association; but the promoters of the movement had better work quietly, and not claim a weekly presentment of their position and results in the columns of a journal.

If I have ventured to criticise the first of Dr. Whitla’s proposals somewhat freely, I fear I must be even less tender towards his second,—that the British Medical Association should busy itself with improving and perfecting our

national pharmacopœia. Dr. Whittle would have us arrange a *plebiscite* of the medical profession on the subject of the common drugs of the British Pharmacopœia in daily use; and he would further appoint another "small committee, with a good energetic secretary, to select new drugs (not in the British Pharmacopœia) likely to have claims to official recognition, and then to invite, aid, and encourage investigation, and report on their actions and values." . . . "No drug would ever be allowed to find its way into the official list until after the most rigorous and exacting scrutiny of its properties by a large number of independent observers."

The first thought that occurred to one on hearing this suggestion was, Why so much fuss and anxiety about a national pharmacopœia? What is a national pharmacopœia to us, or to the science of therapeutics, that we should trouble ourselves about it? How many of us, having found a valuable drug, care, or even ask ourselves, whether it is "official" or not? Is *isthophanthus* "official"? If cocaine had happened to be introduced to the profession a few months after the publication of the new British Pharmacopœia, instead of (as it happened) a few months before its publication, would it be less valuable, less extensively used at this moment? Of course not. We do not question the many advantages, the necessity, of an official guide; but the advantages do not lie in the direction of perpetually "sifting" our remedies into "official" and "non-official." A good drug establishes itself without the help of a pharmacopœia; a useless drug is dropped and forgotten, even though it be bolstered up by official sanction. The London Pharmacopœia deliberately dropped out bromide of potassium in the 1851 edition as being a useless drug; but I am not aware that this bit of sifting interfered with the rapid adoption of the bromides when their influence in epilepsy had been determined. As for a *plebiscite* on the purgation of the Pharmacopœia, surely nothing could be more useless or more likely to end in general discord and discontent. After all, an intelligent pharmaceutical chemist could tell us more in a few minutes as to the value of any given drug in the eyes of the profession than the most elaborate *plebiscite*. He would be able to say what is "asked for" and what lies as wasteful stock on his hands. Useless drugs, like useless men and useless things in general, die a natural death, and may be safely left to their fate.

The matter is perfectly different as regards

the pharmaceutical part of the Pharmacopœia. A pharmacopœia is a pharmacopœia, which, being interpreted, means a treatise on *how to make* medicines. I have already told you in my letter for April, 1887, that the Pharmacopœia Committee of the General Medical Council have a permanent adviser and reporter at work for them, in the person of Professor Atfield, one of the most distinguished and active pharmacological chemists of the day. It is absolutely essential that there should be such an office, filled by such a man, to follow the rapid advance of this department of science, to scrutinize with the greatest closeness, and to put to practical test the many improvements that are published in pharmaceutical methods. Professor Atfield is perfectly able, as I have already suggested, to ascertain the opinion of the medical profession on the therapeutic value of drugs, old and new, and to recommend to the committee for their consideration and decision which substances might be added to the Pharmacopœia and which removed from it. Nothing could be more sensible, and nothing more in touch with the minds of thoughtful men at this moment, than the remarks on a closely allied subject of Professor Leech, of the Victoria University, at the annual meeting of the British Pharmaceutical Congress in Manchester last week. Professor Leech urged his pharmacist audience to keep science ever before their eyes. The prosperity, the evidence, of their profession would depend on their appreciation of the value of scientific methods. We have entered on a new era in the preparation of medicines, and this advance originates essentially in a more correct knowledge of the composition of drugs and the properties of their active principles. To these wise remarks of Professor Leech I would like to add, let us give our counsel a practical shape. If therapeutics, pure and simple, owes a large part of its recent advance to pharmacological research and pharmaceutical improvement, why drift back from the position we have gained by appealing to a *plebiscite* of general practitioners on the value of drugs founded on an experience of old and worthless preparations,—worthless, I mean, from a strictly scientific point of view? Rather let the pharmacologists and pharmacists know that their work is being faithfully and generously followed by one of their own acknowledged heads, in the interest of the medical profession, and we shall stimulate them to still better and greater results; and, what is more, we shall then hear less of the heart-burnings that pos-

sessed the pharmaceutical chemists in 1885 when denied what they considered their legitimate share in the production of our national Pharmacopœia.

PARIS.

(From our Special Correspondent.)

The dulness of summer has been enlivened by an extraordinary communication read before the Academy of Medicine by Dr. Luys, one of its members for the Section of Anatomy and Physiology. The learned academician appears to have gone very far into the *mysteries of hypnotism*, so far, indeed, as to have nearly lost his way. Having repeated Drs. Bureau and Bourn's experiments, and given them more precision by means of photography, Dr. Luys has come to the conclusion that an hypnotized subject can be influenced by medicinal substances held in stoppered bottles, and simply placed in contact with the back of his head. Morphine, for instance, when applied to the left side of the occiput, will cause intense terror and irritation; but, on shifting the vial to the right side, the sedative and pleasurable effects of the drug will readily be observed. Instantaneous photographs of the subjects while under such influences strikingly illustrate the feelings experienced in the case of morphine, as well as the other drugs experimented with. The photos were circulated among the listening academicians. To proceed with the list,—Dr. Luys spoke of eighty-five drugs,—strychnine on the left side will occasion contractions, convulsive starts, etc.; on the right, exhilaration and great enjoyment. With stimulants, such as cognac, rum, champagne, etc., the subject will become stimulated at first, then very gay, and finally so tipsy as to be hardly able to stand, and all that with half an ounce or so of cognac in a vial only touching the head. Dr. Luys forgot to tell his hearers what difference it would make whether the liquor is placed on the right or on the left side. Valerian, haschisch, and other drugs had effects equally characteristic. But in all cases the subject stopped in the midst of the performance, in *statu quo*, when the inciting tube was removed. The most wonderful, however, is still to come. If, said Dr. Luys, in substance, by means of certain drugs, acting purely physically, hypnotized persons can be made to experience such deep perturbations, have their respiration suspended, their nervous centres congested, their cardiac

action disturbed, the experimenter may possibly run the risk of causing death through some imprudence. And should such experiments be conducted by guilty hands, what series of dark crimes may not be committed with impunity, no material proof of the act remaining to bring home a conviction? The sensation caused among academicians by so startling a communication may well be imagined. Some felt as if they had been brought centuries back into the dark ages, while others uttered mild protests of incredulity. The academy having, after a while, regained its composure, decided to appoint a committee to investigate and scrutinize the facts thus brought to its knowledge, a procedure unusual with a member of the learned body, but warranted by the nature of the communication.

As was to have been expected, the medical world outside have shared the sensation and discussed the paper. Already a physician, well known for his familiarity with nervous phenomena and hospital subjects, having recognized from the photographs the one he calls Dr. Luys's star performer, has declared he knows the woman well as a very nervous, hysterical patient, of keen intelligence, and very apt to deceive both herself and any one taking her for a subject of experiments. In fact, the difference between the effects produced by the same substance, when applied to the right or to the left side of the head, reminds one very much of the well-known phenomena of *suggestion*. The subject guesses one thing is expected of her when the glass tube is on the right and another thing when it is shifted to the left, and, in perfect good faith, she will act accordingly.

But, to pass from the supernatural to the real concerns of this material world, physicians are still discussing the question whether *animal vaccine* should not altogether supersede the *humanized virus*, so as to avoid syphilitic contamination. The arguments for and against are too well known to be here repeated, but in the course of his recent lectures at the Hôpital St. Louis, Professor Fournier thus illustrated the difficulty of ascertaining the soundness of the subject supplying the humanized virus. Some fifteen days ago, he said, a gentleman from a country town, married, and the father of a family, came to consult him about secondary syphilitic accidents in the mouth, the result of an amorous escapade. Husbands will do it, even in virtuous America. Proper treatment was prescribed, and the sores were cauterized, the

recommendation being added to have the same done again by his family physician. "Impossible," said the patient; "I can neither go to his office nor ask him to call at my house. Still less can I go to the pharmacist's to have your prescription dispensed." "But, why?" "Because, should the physician call, my wife would want to know what for. On the other hand, should I go to his office, the whole town would know of it, and place on the step the worst possible interpretation, unfortunately too true in my case. As to the medicines, it would be more awkward still. Your prescription would be lying loose about the pharmacy, to be looked at by all the country folks who step in on market days.* Moreover, it is the pharmacist's wife who writes up the bills and accounts, and she would be sure to tell the whole town of my scrape within twenty-four hours." Thus, added Professor Fournier, the family physician of such a patient, being carefully kept from knowing the gentleman's condition, may take vaccine from a child of the family, well convinced nothing is amiss, and so run the risk of propagating syphilis right and left. What may really be the percentage of danger is a question for others to determine; but certain it is that many American physicians must have had similar experience to that related by Professor Fournier.

The physiological effects of *Cytisus laburnum* have been investigated by Drs. J. L. Prévost and Paul Bruet, whose memoir, just read before the Academy of Sciences, brings out the following facts: The parts of the plant experimented with were the flowers, then the green pods, and finally the dry seeds. One point of pharmacological interest may be incidentally noticed,—namely, that *the aqueous extract of the seeds is more active than the alcoholic*. The animals practised upon were frogs, cats, dogs, rats, guinea-pigs, rabbits, and pigeons. With frogs the drug paralyzes the motor nerves, precisely like curare. The animal dies of heart-paralysis. The warm-blooded animals that can vomit are more affected than the rodents are, especially the rabbits. The last are remarkably proof against the effects of laburnum, an immunity that will astonish no one on the part of an animal which feeds with impunity on hyoscyamus and belladonna-leaves. With animals that can vomit, the emetic action is produced

with very small doses, 5 centigrammes ($\frac{1}{2}$ of a grain) of the aqueous extract being sufficient for a cat. The effect occurs within fifteen or twenty minutes of the administration through the stomach, and within six minutes when the drug is given hypodermically. The vomitings were accompanied with violent efforts, but no other symptoms were observed, and no intestinal trouble or diarrhoea. With larger doses general weakness and prostration are produced, hitherto attributed to a narcotic action, but thought by Drs. Prévost and Bruet to be due to a general paralysis of the motor nerves, which ends in death by asphyxia, unless artificial respiration be resorted to. The bilious secretion, and the pupil and cornea of the eye, remain unaffected by laburnum; the same is true of the heart in the case of warm-blooded animals. The conclusions of the memoir are that (1) laburnum may be considered a good emetic, acting promptly, especially when administered hypodermically; (2) with large doses the emetic effect is accompanied by a paralysis of the motor nerves similar to the action of curare, if not identical with it.

The *history of the mustard-leaves*, now so frequently employed, offers some interest, because it shows how discoveries are gradually evolved, and how the man who really finds out the cardinal principle of an improvement is not always the one to profit by the invention, while another, only adapting to it some known device which facilitates its application, will often reap the benefits and attach his name to the discovery. M. P. Vigier, an old and experienced Paris pharmacist, has related the inside history of the mustard-leaves aforesaid. It seems it was Hurant who found first that when mustard flour has been freed, by either pressure or solvents, of its fixed oils, it becomes unalterable on keeping, and considerably more active. But this important discovery was not taken advantage of until long after, when Boggio, another Paris pharmacist, determined to spread a thin coating of the "lean" mustard flour over a paper painted with a thick solution of gum arabic, and to cover the whole with thin muslin, to keep the composition in place. The mustard-leaf may be said to have been then complete, if not perfect. It answered the purpose well. Some improvements only were needed, and they would have come in time had Boggio understood the value of advertising, and thus obtained the pecuniary means and incentive to perfect his preparation. As it was, the dry sinapism dragged along a melancholy

* A French physician's prescription is often a voluminous document, containing many details and directions, besides the formula proper, and all in French.

existence, when Rigollot conceived the idea of substituting for the gum arabic a solution of india-rubber, such as had long been known in industry for waterproofing fabrics. The improvement was undoubtedly an important one, but the chief merit of Rigollot is to have understood his period and vigorously advertised his preparation. This short story bears its own moral.

As a correspondence from Paris would hardly be complete without some reference to *phthisis*, a new cure for consumption will end the present communication. The treatment this time consists in *inhalations of hydrofluoric acid*. Dr. Garcin, in a memoir read on September 20 before the Academy of Medicine, said that the physicians of the Baccarat and Saint-Louis plate-glass factories have for some time observed the beneficial effects experienced by phthysical workmen from exposure to the fumes of the acid. Hydrofluoric acid, both liquid and gaseous, is largely used in the factories for plate-glass engraving, and notwithstanding all ventilating precautions, the gas more or less permeates the workshops. The treatment, based upon this observation, consists in placing the patient in a closet of six cubic metres capacity (about two hundred and fifty cubic feet), where he is to remain for an hour every day. The air of the closet is impregnated with acid fumes by pumping into it a known volume of air run through a twenty-five per cent. watery solution of hydrofluoric acid. The dose varies according to the case. Consumptives of the first degree easily stand twenty litres of acidified air to the cubic metre, which corresponds to two per cent. in volume; for the second degree, fifteen litres are enough; and for the third, ten litres only, and even then it is advisable to run the medicated air through a washing-flask containing some six ounces of water, so as to moisten the atmosphere of the closet and moderate the effects of the acid. Dr. Garcin reports a good percentage of cures by his treatment,—some thirty-five per cent., which he attributes to the destruction of the tubercle-bacilli by the direct action of the acid. However this may be, it must be admitted Dr. Garcin's method is in accordance with the modern theories respecting tuberculosis.

One word more. French delegates to the Washington Congress are beginning to come home, well pleased with their experience and the cordial welcome they received in the American capital. Some speak highly of

their reception in Philadelphia and their visit to the Philadelphia Hospital, over which they grow quite enthusiastic.

PARIS, September 28, 1887.

THE DANGERS OF SANTONIN.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN :—From time to time I see in the GAZETTE reports on the action of santonin, which, in connection with my own experience, makes me doubtful of its harmlessness as an anthelmintic.

I have been using it upwards of twenty years; many a time when strong symptoms of worms were present have administered santonin, and the signs of worms disappeared and the child became well, and yet no worm was seen. It is true I have nearly always exhibited the drug with the old almost universal calomel.

I have often met with cases of remittent and intermittent fevers in which the positive evidence of worms was present. In such cases have uniformly opened treatment with calomel and santonin in sugar, followed quickly with castor oil and spirits of turpentine. In such cases as the above I often note a marked disposition to convulsions at once, and at last to gastro-enteric or verminous fever. I have several times seen cases of obstruction of the bowel caused by the winding together of the dying worms caused by the use of santonin, and nervous and spasmodic trouble soon supervened. I have thought that the use of santonin for the riddance of worms was more liable to such misfortune than any other vermifuge that I have used. Before I ever used santonin, and in the employment of other worm-destroyers, I have often found a great variety of nervous symptoms and very threatening indications to arise as soon as the worms were disturbed or destroyed. Have not all practitioners, whether in the use of santonin or some other worm-medicine, encountered some strange departures from the usual course of verminous disease? A malady that can cause night-terrors with all its phantasmagoric visions can also produce blindness, and has done so often when the stomach and brain have been long in morbid reciprocity by the presence of worms in the stomach. We may not be surprised at heart-symptoms resembling the action of a powerful heart-depressant, or any other death-symptom which may have direct relation to the stomach or brain.

My first use of santonin was in my own son, 6 years old. He had night-terrors. I exhausted the catalogue of anthelmintics and tonics, mineral and vegetable. He got no better, but worse, until his frights at the sight of familiar friends at times threatened convulsions, and then temporary blindness was increasing in duration. I gave him santonin, per mouth and per rectum, morning and night, 3 grains each way. No worms appeared, and yet his night-terrors stopped to return no more. A young man, 21 years old, clerk in a drug-store, had night-terrors, and consulted me on the subject. I ordered santonin and calomel each night for two nights. He laughed and said he was not wormy, and for a time refused to take the prescription; but at last he did take it, and his terrors ceased, though no worms appeared.

I have had better success with santonin in the treatment for worms than any other vermifuge that I have used; have had as few strange departures from what is common to verminous diseases under its use as under any other worm-medicine that I have used. I do hope its medicinal properties and therapeutics will soon be settled.

THOS. H. STEWART.

TREATMENT OF EPISTAXIS.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—For the past five or six years I have practised exactly the same treatment in epistaxis as that recommended by Dr. J. Robinson, of Manhattan, Kansas, on page 568 of vol. xi. of the GAZETTE. In every instance the treatment has been entirely successful. I am unable to tell at the present time from what source I received the idea.

Yours truly,

F. W. PUTNAM, M.D.

BINGHAMTON, N. Y.

"THE NEW REMEDY FOR NIGHT-SWEATS."

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—I have just read the article of Dr. Fliesburg in the September number of the THERAPEUTIC GAZETTE. It seems that the doctor is highly incensed that I should have occupied a small space in your journal to call the attention of the profession to a

remedy for night-sweats. He should be glad, however, that I did so, because it has given him the opportunity to abuse me and to air his chemical knowledge. Education and politeness should go hand in hand: the doctor seems to possess the first to an eminent degree, Ph.G., M.D. Now, I did not mean to be personal to the doctor in my article: I did not know that Oscar Alf. Fliesburg, Ph.G., M.D., existed. If, however, he has in the course of his practice used medicines discovered by others, and claimed for himself the honor of discovering them, and therefore feels hurt that I said in my article that this had been done by members of the profession, and I thus hit him unawares, why, I am truly sorry. It seems to me, however, that before criticising me and the remedy I proposed he should have at least given it a trial, and if on doing so it had failed to accomplish the end, then he could have said, "I have tried it and it will not do what Dr. Pope claims for it." I have used the cinquofoil in a case since the publication of my article, and it has again proven successful. The profession I hope will give it a trial notwithstanding Dr. Fliesburg's article, and I hope that the doctor will do the same.

Very respectfully,

SAMPSON POPE, M.D.

NEWBURY, S. C., October 1, 1887.

Notes and Queries.

THE THERAPEUTIC VALUE OF OLEUM HYOSCYAMI AND OF OTHER "OLEA COCTA."

As is well known, the oleum hyoscyami and other "oils" of narcotic herbs are merely olive oil (or some other bland fatty oil) which has been impregnated by heat or other means with whatever constituents were soluble in the oil. Generally more stress has been laid upon the appearance of these preparations than upon their alkaloidal contents, a handsome green color being above all highly prized.

MR. DIETERICH has recently examined some of these products, made by himself with all possible care. Having previously analyzed the extract made from the same hyoscyamus which was utilized in the preparation of the "oleum hyoscyami," and having found this to contain at least 0.75 per cent. of hyoscyamine, he ascertained that a corresponding portion of the oil contained only

about one-fifteenth of this quantity of alkaloid. Before describing his *modus operandi* in the assay of the oil, we will give a brief abstract of his method of assay of extract of hyoscyamus and of other extracts :

Triturate 0.2 gm. of powdered lime, made by ignition from marble, with 3 gm. of water, and mix this well with 2 gm. of the extract to be examined (assuming it to be either belladonna, conium, aconite, or hyoscyamus). When it is dissolved, add 10 gm. more of powdered lime, and rub until a dry powder results. By means of a continuous extraction apparatus extract the mass, packed in a little glass cylinder, with ether. In the case of belladonna, aconite, and hyoscyamus the extraction will be completed in about forty-five minutes. In the case of conium, at least two hours will be required. To make sure, the extraction with ether ought to be repeated. Transfer the ethereal solution to a capsule, rinsing the flask in which it has been contained with ether. Add 1 c.c. of distilled water and evaporate the ether carefully on a water-bath at a temperature not exceeding 30° C. (86° F.), taking care that no vapors of any volatile acid (nitric, hydrochloric, acetic, etc., acid) come in contact with it, to prevent even the slightest trace of the respective alkaloids from being neutralized. Dissolve the final residue in 0.5 gm. of diluted alcohol (sp. gr. 0.892), dilute the solution with 10 c.c. of distilled water, add 1 or 2 drops of rosolic acid solution (1 to 100 alcohol), titrate with $\frac{1}{100}$ normal sulphuric acid,—that is, such as contains 0.049 gm. of H_2SO_4 in 1 litre, or of which 1 c.c. contains 0.00049 gm. of H_2SO_4 .

Each cubic centimetre of this acid neutralizes, respectively, according to the author,—
0.00289 gm. of atropine or hyoscyamine.
0.00523 gm. of aconitine.
0.00127 gm. of coniine.

For extract of belladonna, the author had found the results to vary between 1.142 and 1.184 per cent. in alkaloids.

Extract of aconite, between 1.252 and 1.305.

Extract of conium, 0.589 to 0.622.

Extract of hyoscyamus, 0.551 to 0.780 per cent.

Coming back now to the oleum hyoscyami, we will give the process followed by the author in assaying it.

500 gm. of the oil were shaken with four successive portions of 200 gm. of alcohol mixed with 4 drops of diluted sulphuric acid. The united liquors were filtered and evaporated on a tared capsule at a gentle heat (not ex-

ceeding 60° C. = 140° F.) until the residue amounted to 10 gm. This was mixed with 50 gm. of water in a test-tube, the mixture well shaken, filtered through a wetted filter, and the residue left behind once more treated in the same manner. The united acid filtrates were again evaporated below 60° C., triturated with 2 gm. of powdered lime, afterwards with 10 more gm. of the same, and the mixture extracted with ether precisely as described in the preceding process. The ethereal extract was evaporated to 1.5 gm., mixed with 0.5 gm. of diluted alcohol (0.892), and then with 10 gm. of water. Next, 1 drop of solution of rosolic acid was added, and, lastly, enough of the $\frac{1}{100}$ sulphuric acid, of which 3.5 c.c. were consumed, which correspond to 0.010115 gm. of hyoscyamine in the total 500 gm. of the oil.

Diederich states correctly that the process followed in making these oils from narcotic herbs is faulty in this,—that the alkaloids are not set free from their salts so as to enable them to be dissolved by the oil. He therefore proposes to set the alkaloids free by the use of ammonia, which has the further advantage that it greatly increases the brilliancy of the green chlorophyll color upon which so much weight is laid. He found that this use of ammonia increased the quantity of hyoscyamine contained in the oil to triple the amount present in the ordinary preparation. The process he recommends is as follows :

Mix 20 parts of water of ammonia (sp. gr. 0.960) with 750 parts of alcohol, moisten with it 1000 parts of coarsely-powdered hyoscyamus-leaves, firmly press the damp powder in a porcelain vessel, tie parchment-paper over it, and let it stand twelve hours. Next, transfer it to a large porcelain vessel, pour upon it 5000 parts of olive oil, stir well, and heat it, under occasional stirring, upon a steam bath, at a temperature of 50° to 60° C. (122° to 140° F.). Then express and filter. A higher temperature results in loss of alkaloid.—After *Rundschau* (Prag), No. 17; *American Druggist*, July, 1887.

PAPAYOTIN IN FISSURES OF THE TONGUE.

SCHWIMMER (*Wiener Med. Woch. ; Nouv. Remèdes*) has succeeded in the treatment of fissures of the tongue with papayotin after failure with chromic acid, iodoform, and nitrate of silver. He used a solution of from 1 to 2 parts of papayotin in 10 parts each of

glycerin and distilled water, applied five or six times a day, the fissure being previously well dried. No maceration takes place, but the pain is stopped and the epithelium renewed. The treatment was used in twenty-five cases, all of which were completely cured, except one, which was of a syphilitic nature, and in that case, although antisyphilitic treatment had failed, amelioration followed the use of papayotin.—*New York Med. Journ.*

THE DIGESTION OF CARBOHYDRATES.

The paper of Ellenberger and Hofmeister, recently published in *Biedermann's Centralblatt*, contains a summary of their long-continued researches on this subject. They have experimented upon the horse, and their conclusions are by no means identical with those that have hitherto been received. An abstract, by MR. J. FLETCHER, of this important paper appears in the current number of the journal of the Chemical Society; and it is so lucid and concise that we reproduce it almost *in extenso*.

"The action of saliva in the process of mastication is shown to be more mechanical than chemical. The quantity of saliva used depends on the dryness and roughness of the food rather than its contents in starch; and the authors think that the chemical activity of saliva owes much to spores, which, floating in the atmosphere, mix with the food and assist in the fermentation process. A digestive action of the mixed food takes place in the stomach when the acidity due to hydrochloric or lactic acid does not exceed 0.03 to 0.04 per cent. The left section of the stomach of the horse does not secrete a gastric juice; this is the function of the right portion. The pure gastric juice of the horse contains lactic, fatty, and amylaceous ferments,—the latter in small quantities. Cellulose is not digested in the stomach of the horse, but muscle, fat, gelatin, and flesh generally are easily digested, bone and elastic tissues more slowly. Pepsin operates actively only when acids are present, about two per cent. of lactic acid or 0.2 per cent. of hydrochloric acid being necessary. The activity of pepsin does not increase in proportion to its quantity after reaching a certain point, but it rather becomes injurious. The acid which appears first in the digestive process is lactic acid, and later hydrochloric; at the time of greatest activity lactic acid is present in the upper and

lower extremities of the digestive tract, hydrochloric acid being found in the intervening part. The digestion of starch in the stomach of the horse lasts for about two hours; that of albuminous matter takes place later, and occupies three or four hours after the eating of the food. The drinking of water immediately after food does not appear to hinder digestion. The secretions of the intestinal canal unite in themselves all the properties of the gastric juice, and can act as a substitute for it, and are particularly energetic in the decomposition of fats. The duration of the digestive process in the horse is long, lasting almost three days. A very active lactic fermentation of sugar takes place in the stomach and intestines, but the authors do not say that all the sugar which is lost in the course of passage is lost in that way; it is more probably reabsorbed."—*Lancet*, August 27, 1887.

CHANGES IN MILK PRODUCED BY FREEZING.

KAISER and SCHMIEDER experimented with two samples of milk, freezing one slowly, the other quickly, and afterwards partially thawing them. In the former case the ice contained the greater part of the fat, and the fluid portion most of the casein, milk-sugar, and salts. In the quickly-frozen and partially-thawed sample the fat was equally distributed between the solid and fluid portions; the author explains this by the fat-globules rising to the top when the process of freezing is gradual; they thus become embedded in the flakes of ice, whilst in quickly-frozen samples this cannot take place, and the fat is more evenly distributed. If a dealer whose milk has been frozen pours off the clear fluid which underlies the ice, he is liable to the suspicion of adulteration on the one hand, or will deliver milk above the standard on the other. Milk which has been frozen should be well thawed and shaken up, and not sold whilst any ice is visible.—*The Pharmaceutical Journal and Transactions*, September 10, 1887.

ACETANILIDE.

In an interesting article in the *Centralblatt für Gesamte Therapie*, by DR. GABRIEL PAVAI-VAJNA, concerning the use of acetanilide, or antifebrin, the author asserts the superiority of antipyrin over antifebrin, and also speaks of the importance of giving the

drug in small doses. He sums up his experiences with antifebrin as follows :

1. Antifebrin in small doses will be found to actively reduce the temperature. A dose of 0.25 to 0.50 centigramme ($3\frac{3}{4}$ or $7\frac{1}{2}$ grains) will reduce a high temperature from 1° to 4° C. Care, however, should be exercised, as in some weak patients 0.25 centigramme has been known to cause collapse, and, again, in other cases, 1 gramme has had no effect.

2. The fall of temperature will begin in one to three hours after taking the drug, and will remain down for two to four hours, and in most consumptives from eight to ten hours. The temperature will then rise quickly, without, however, any accompanying chills.

3. In nearly all cases slight perspiration occurs, rarely collapse or cyanosis.

4. Antifebrin has no effect on the respiration. The pulse usually decreases with the temperature, although not always proportionately.

As antifebrin, even when given in large doses, has no effect on the heart's action, it can, therefore, be given to those fever cases who have heart-failure or the like, when antipyrin or salicylic acid would be dangerous.

5. Antifebrin seemingly affects but slightly the digestive organs. Even when thirty to forty doses were given daily no nausea, vomiting, pain, purging, or dizziness was experienced.

6. Antifebrin is given with the greatest certainty and best results in articular rheumatism and phthisis pulmonaris. In rheumatism it is of equal value with salicylic acid, and in phthisis it is superior to quinine, and in some cases superior to antipyrin.

CARBOLIC ACID AS A SAFEGUARD AGAINST INSECTS.

Many people do not know how easily they can protect themselves and their children against the bites of gnats and other insects. Weak carbolic acid sponged on the skin and hair, and in some cases the clothing, will drive away the whole tribe. A great many children and not a few adults are tormented throughout the whole summer by minute enemies. We know persons who are afraid of picnics, and even of their own gardens, on this account. Clothing is an imperfect protection, for we have seen a child whose foot and ankle had been stung through the stocking so seriously that for days she could not wear a leather shoe. All this can be averted accord-

ing to our experience, and that we believe of many others, by carbolic acid judiciously used. The safest plan is to keep a saturated solution of the acid. The solution cannot contain more than six or seven per cent., and it may be added to water until the latter smells strongly. This may readily, and with perfect safety, be applied with a sponge. We have no doubt that horses and cattle could be protected in the same way from the flies, which sometimes nearly madden them, and it even seems possible that that terrible scourge, the African Tsetse fly, might be kept off in the same manner.—*The Lancet*, June 25, 1887.

TWO NEW ALKALOIDS OBTAINED FROM THE BARK OF THE ARTAR-ROOT.

GIACOSA and MONARI, who have examined the bark of this plant, which inhabits the eastern coast of Africa, gave the following as the result of the examination: If a small piece of the bark is retained in the mouth it produces a sensation similar to that occasioned by the application of the poles of a constant current. By extracting with petroleum ether they separated a heavy, fatty oil, not crystallizable, with the taste above described, and a cholesterin which melts at 120° to 130° . By suitable treatment of the alcoholic and ethereal extract they obtained two entirely different alkaloids. One occurs in greater quantity, soluble in ether, insoluble in water, non-crystallizable, forming yellow salts with sulphuric, nitric, and hydrochloric acids, and does not show the reactions of berberine. It was critically examined in some of its combinations, and isolated, but its formula has not yet been determined. The second alkaloid exists in small quantity, crystallizes in beautiful red tablets, is soluble in water, and also yields yellow salts with acids. It was not subjected to further analysis. The physiological effect of the first alkaloid is not unlike that of veratrine. Its action upon the heart manifests itself in reducing the rapidity of the contractions with apparent increase of the force. The heart resists the action of this alkaloid for some time. Nothing is said of the action of the second alkaloid.—*Intern. Klin. Rundsh.*, 1887, 27; *Pharm. Record*, August, 1887.

THE DANGERS OF ANTIPYRIN.

Our remarks in the preceding number of the GAZETTE as to the dangers of antipyrin have received confirmation in a note published by the Paris correspondent of the *British Medi-*

cal Journal (August 20, 1887). The instance he refers to occurred in the practice of Dr. BERNOUILLE, of Basle. The patient was a strong, well-nourished woman, aged 52, suffering from chronic rheumatic arthritis of about three months' standing. During the first week of the antipyrin treatment she took 15 grammes, the daily dose varying from 2.5 to 4.0 grammes ($37\frac{1}{2}$ to 60 grs.). This was well borne. Subsequently, however, on three different occasions, the administration of a 1-gramme dose of antipyrin was followed in three or four minutes by severe pain in the chest and abdomen, mental anxiety, cold perspiration, followed by rapid rise of temperature, reaching to 39.2° and 40.2° C. The pulse was 120 and full; there was vomiting, with swelling and redness of the face, and an erythematous rash all over the body. These symptoms gradually disappeared a few days after discontinuing the remedy. Similar cases have been reported by Drs. S. Laache in the *Centralbl. f. Klin. Med.*, vol. vii., 1886, p. 32, and A. Fraenkel in the *Deutsche Med. Wochenschr.*, No. 49, 1886.

ALKALINE MERCURIAL SOAP AS AN ABSORBENT.

DR. SVETUKHIN, chief of Professor Lashkevich's clinic in St. Petersburg, in some therapeutic notes contributed to the *Russkaya Meditsina*, mentions that various preparations have been recently employed in the wards for the purpose of promoting absorption of pleuritic effusion. Iodine ointment is too mild and too slow in its action to answer the purpose, and the odor of iodoform ointment is so strong that it interferes too much with the comfort of the other patients, and so is found to be unsuitable for hospital practice. It was found that iodine ointment could be advantageously supplemented by soft soap (*sapo kalinus viridis*) inunctions, or by rubbing in unguentum hydrargyri. The most valuable of all applications for this purpose was, however, found to be a preparation called *sapo kalinus hydrargyrosus*, which is made by mixing in certain proportions metallic mercury, unguentum hydrargyri, caustic potash, and olive oil, so that the resulting soap contains a third of its weight of mercury, the unguentum hydrargyri of the Russian Pharmacopœia containing half its weight of mercury. This is agitated with hot water so as to form a good froth and lightly rubbed into the skin. It has the advantage over unguentum hydrargyri in being much more easily rubbed in, in not ir-

ritating the skin, and thus causing eruptions, and, lastly, in not so rapidly setting up stomatitis or salivation. From half a drachm to a drachm of this mercurial soap is used for each inunction. After from six to ten applications some diminution may be detected in the effusion, and after twenty inunctions the whole is usually found to have disappeared. Of course, favorable results can only be looked for in cases of simple effusion; they cannot be obtained in empyema.—*Lancet*, August 6, 1887.

CYANIDE OF ZINC IN CARDIAC AFFECTIONS.

Cyanide of zinc exerts, according to PROFESSOR LASHKEVICH, a beneficial effect on some cardiac cases which cannot be obtained by other means. In cardiac neuroses it acts quickly and certainly. Palpitation, want of rhythm, and pain in the region of the heart are quickly affected, sometimes indeed cured, by this drug. The dose is from $\frac{1}{16}$ to $\frac{1}{4}$ of a grain three times a day. Similar beneficial effects are produced when there is organic cardiac disease. The regulating action of cyanide of zinc in valvular insufficiency is less marked than its effect on cardiac neurosis; nevertheless, there were cases in the wards where it acted better than other cardiac remedies, as digitalis, convallaria majalis, adonis vernalis, etc. In this respect it acted particularly satisfactorily in cases where other remedies could not be given without producing derangement of the gastro-intestinal system. Here it improved the action of the heart, thus increasing the secretion of urine, moderating the pulse, and diminishing the dropsy due to irritation of the gastro-intestinal canal. In a case of nervous palpitation with hysterical anuria, cyanide of zinc diminished the palpitation, and at the same time caused the secretion of urine to recommence.—*Lancet*, August 6, 1887.

A CONVENIENT PRESCRIPTION FOR THE ADMINISTRATION OF PHOSPHORUS.

SALTMANN has found oil of almonds an especially good medium for the use of phosphorus, and prescribes as follows:

R Phosphori, gr. $\frac{1}{4}$;
Ol. amygdalar., \mathfrak{z} iiss;
Aque dest., \mathfrak{z} iiss;
Gummi arab., \mathfrak{z} iiss. M.
Ft. emul.
Sig.—Dose, 1 teaspoonful.

—*Therapeutische Monatshefte*, Heft 5, 1887.

— T H E — Therapeutic Gazette.

Whole Series,
Vol. XI.

DETROIT, MICH., } November 15, 1887.
PHILADELPHIA, PA., }

Third Series,
Vol. III. No. 11.

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Original Communications.

NEW ANTISEPTIC METHODS OF TREATING PULMONARY DISEASES.*

BY PROFESSOR DUJARDIN-BEAUMETZ, Paris, France.

GENTLEMEN:—In a series of lectures on "New Medications," which I had the honor to deliver before you a couple of years ago, I endeavored to show you that although the method of antiseptics, in its application to pulmonary diseases, was still in its infancy, yet there was every reason to expect from such antiseptic medication, when

founded on the rational observation of the causes of diseases, brilliant results in the future. It must, indeed, be confessed that we have not made as rapid progress in this direction as we could have wished; but this is not at all surprising, considering the difficulties which we have at every step to encounter in adapting the principles of antiseptics to the treatment of pulmonary affections.

In fact, to state the matter plainly, the rational application of antiseptic methods implies several conditions: first, the perfect knowledge of the microbe itself, and the conditions in which it develops, reproduces itself, and dies. We must know, too, its degree of resistance, and especially its degree of vitality,

* A lecture delivered in Cochin Hospital.

as contrasted with that of the organ where it vegetates; and this last condition is practically the most important of all. In fact, the lung is an organ pre-eminently essential to life; and if, in attempting to effect destruction of the germ of the disease you injure the organ which is its habitat, you will have left the subject in a worse state than before.

Antiseptic inhalations—a subject to which we shall shortly return—have not given all the results that they promised. For this there are several reasons,—first, a number of these antiseptics are irritant substances, whose use cannot be prolonged with impunity, and which soon determine in the larynx, trachea, bronchi, and even in the lungs, symptoms of irritation and inflammation which cannot but be prejudicial to the patient. Moreover, the lungs are an effective channel for absorption into the blood, and, as many of the best antiseptics are toxic, and the patient in carrying out the treatment would necessarily inhale considerable quantities, there would be more or less danger of systemic poisoning. Lastly, there is another difficulty in the way, owing to the fact that recent experiments have proved that in inhalation atomized saline or other substances penetrate with difficulty to the last bronchial ramifications, and that the greater part of these sprays are retained in the upper air-passages. The physiological experiments on animals undertaken by Professor Jacobelli, of Naples, with his ingenious atmimeter, before the Commission appointed by the Academy, have shown us how questionable a matter is this penetration of vaporized solutions to the ultimate bronchi; and my colleagues of this Commission—Marey and Brouardel—have shared my doubts on the subject.*

You are well aware, gentlemen, that the pulmonary diseases of microbic origin are not numerous, and that it is to the treatment of tuberculosis especially that clinical investigators are now directing their energies. The discovery of the bacillus tuberculosis has opened up a new line of experimentation, and, I may add, a rational and scientific one, for those who are seeking for more radical therapeutic methods in this formidable disease, which makes such ravages among our civic populations, and especially among the poorer

classes, who, by reason of want of hygiene, bad alimentation, alcoholic excesses, offer an excellent culture-field to the parasite.

Unfortunately, the tubercle-bacillus is a micro-organism characterized by great resistance and difficult to overcome, considering its vitality and its ability to tolerate very energetic treatment. For this reason, and for those which I have just mentioned, it has been thought prudent to cease attacking it from the front, and to seek other and safer methods of getting at the enemy. It is these new methods which I am going to make the subject of my present lecture,—methods which, I believe, indicate a real advance in the antiseptic treatment of pulmonary diseases.

All these antiseptic measures, without exception, attempt to realize this fundamental intent: to bring in immediate contact with the pulmonary mucosa and the air-cells the antiseptic substances. Of the three procedures which have been proposed to attain this end, the first is that of parenchymatous injections made directly into the pulmonary tissue. This method, advocated by Lépine, Truc, and Gouguenheim, has been abandoned for reasons which I have before given you. By another process, we seek to avail ourselves of a property possessed by the pulmonary textures, of elimination by exhalation through the air-cells of substances introduced into the blood. The third method is, in principle, the older one, of direct inhalation by the buccal passage of antiseptic medicines. It remains for me to speak of these two procedures, that of exhalation and that of inhalation. I will begin with the former.

Instead of directly introducing the medicinal substance into the lungs by the air of respiration, we first cause it to enter the circulation by some process; then, in being eliminated at the surface of the lungs, it comes in contact with the diseased parts, and thus enters into conflict with the morbid germ. As absorption by the lungs is left out of the case, there remains only absorption by the subcutaneous tissues, or by the digestive tube; in other words, the medicament must be introduced hypodermically, or by the stomach or rectum. In phthisical patients the stomach is often not in a good condition for the reception and absorption of medicaments; and by reason of the facility with which vomiting may be induced, or the stomach otherwise irritated, and of the necessity of keeping this organ in a sound con-

* "On the Atmimeter of Professor Jacobelli." Report presented in the name of a Commission composed of MM. Brouardel, Marey, and Dujardin-Beaumetz. (Academy of Medicine, session of August 2, 1887.)

dition in order to nourish the patient, we are obliged to choose the hypodermic method, or avail ourselves of the property of absorption possessed by the rectum, in order to carry out our intent.

You know the inestimable service rendered by phenic acid to surgical antiseptics. It is not surprising, therefore, that, considering the volatility of phenic acid, and its elimination by the pulmonary passages, it should have occurred to clinicians to utilize this agent in the treatment of pulmonary tuberculosis. A number of experimenters, among whom should be mentioned Dr. Filleau and my former pupil, Dr. Leon Petit, have attempted to practise subcutaneous injections of phenic acid in phthisis. I have myself made trials of this method in my hospital service, and my interne, Sapelier, has put on record a series of interesting observations pertaining to this subject.

The phenic acid injections may be made directly under the skin, or the needle may be plunged deeply into the soft parts, and even to the seat of the lesion when the injection is made in the region of the thorax.

Professor Lépine and his pupil Truc were among the first to venture intra-pulmonary injections in tuberculous patients. They made use of creasote, a two per cent. solution in alcohol, preceding this injection by one of morphine to prevent pain. They also advised iodoform injections in tuberculous cavities, as these injections had given brilliant results in abscesses of a tuberculous nature.

An ordinary hypodermic syringe is inadequate for these deep injections of phenic acid, and it would be necessary for you to make use of a larger kind, a specimen of which I here show you, and which holds five grammes of liquid. You can employ a two per cent. solution, having care to use only the pure phenic acid, previously dissolved in glycerin, which is less irritant than alcohol.

You will choose as the place for the injection the anterior part of the chest under the clavicle. The punctures should be made more or less often, according to circumstances, and their number should vary, according to the gravity and course of the disease, from two each week to two each day. Under no circumstances should they be too often repeated, for in exceeding a certain dose of the medicament you run the risk of seeing all the symptoms of carbolic-poisoning make their appearance,—coldness, cyanosis, collapsus, vomiting, black coloration of the urine.

Moreover, some persons are particularly intolerant of this medicinal agent, and cannot with safety be subjected to this treatment.

In spite of some disasters, the injections of phenic acid have given quite favorable results in a certain number of cases. Almost always the appetite is improved; patients that previously were bedridden are able to get up and go out and take the air,—a great advantage in consumption, as you know. The cough and expectoration have diminished, and, what is also very gratifying, we have often seen the night-sweats, so painful to poor consumptives, disappear.

At the same time the injections of phenic acid are, as I before intimated, not without danger. Besides the risk of poisoning which you run if you resort to them, they are often irritant, and they have not entered into current practice. They ought, however, to be retained for exceptional cases, where they will afford real relief to patients. I shall return farther on to the subcutaneous method, and you will then see what progress has been accomplished by the discovery of new vehicles capable of rendering perfectly innocuous substances otherwise very irritating.

We come now to the method of gaseous rectal injections, first brought before the profession by Dr. Bergeon, of Lyons, a method founded on the labors of Cornil and Chantemesse, who had shown that among the gases capable of hindering the development of the bacillus tuberculosis the first place should be accorded to sulphide of carbon and sulphide of hydrogen. These gases are both toxic when respired in vapor, therefore it would not do to think of utilizing them by inhalation. Bergeon, inspired by a happy idea, showed how to introduce them into the economy by the rectum, and this is the really new feature of his method.

We knew already from Claude Bernard's remarkable discoveries, that, in order that a toxic substance may produce its characteristic effects, it must enter the arterial system and be thence disseminated through the organism; and, if it can be eliminated before being taken up by the arteries, it fails to produce its noxious results.

Such being the case, the introduction of toxic and antiseptic gases should be made by the intestinal canal, and as we have seen that we must respect the stomach, the rectum is the only available channel. In fact, by using the rectum as a medium of absorption, we can introduce into the economy a great quantity of hydrogen sulphide without causing

toxic symptoms. The gas after being absorbed traverses the portal system, and consequently the liver, the first emunctory for the elimination of poisons; then it reaches the lungs, where the greater part passes through the parenchyma and escapes by exhalation.

The quantity of gas administered (or the dose, if I may so call it) must not be too large, for you would run the risk of an incomplete elimination, and a part, passing into the arterial system, might determine symptoms of poisoning. Moreover, the sulphuretted hydrogen, which is so toxic, cannot be used in a state of purity; it must be diluted with some other gas. Air being too irritating, Bergeon made his choice of carbon dioxide, which is not irritant, is readily eliminated by the respiratory passages, and, besides, possesses anæsthetic properties well known to you.

He thus exhumed from the past, as Maurice Dupont has shown,* a method counselled at the close of the last century by Priestley, who recommended to the physicians of the period to employ *fixed air*—i.e., carbonic acid—in lavement in the treatment of certain diseases.

The method of Bergeon became known by the various communications made by him to the Academy of Sciences and the Academy of Medicine. I immediately made application of it in my hospital service, and one of my pupils, Dr. Lecomte, has analyzed the results obtained, and made this the subject of his inaugural thesis.†

Let us now take a survey of the apparatuses employed for these gaseous rectal injections. The one employed by Bergeon was the invention of Dr. Morel, of Lyons; the one which I have used in my hospital was constructed by Dr. Bardet, chief of my therapeutic laboratory. There is another which I shall describe presently, which was contrived by Dr. Faucher and was presented to the Academy by Professor Cornil. Lastly, Constantin Paul has also devised a gazogenous apparatus, furnished with a manometer, which enables one to measure

the pressure of the carbonic acid which penetrates the rectum.

In the apparatus of Morel, the carbonic acid is generated by pouring sulphuric acid on bicarbonate of sodium in a flask. The complete apparatus consists of a flask in which the carbonic acid is generated, of a rubber bag capable of holding six litres of carbonic acid, of a large, wide-mouthed bottle to contain the medicinal substance, and of a rubber-ball injector, which acts the part of a suction- and force-pump. The rubber bag having been filled with carbon dioxide, is adapted to the bottle, which is itself connected with the injector. It is necessary to take care before introducing the canula into the rectum to get rid of all the air contained in the apparatus by making a few pressures on the rubber ball.

This apparatus presents certain inconveniences: first, the use of sulphuric acid is an objection, for some of it is sure to come over with the carbonic acid during the effervescence and vitiate the result by the irritation which its presence causes. Then again, it is too cumbersome, and is not sufficiently portable, which is a serious inconvenience in private practice; therefore, at my request, Dr. Bardet has constructed another model in which all the parts are brought together in a convenient, portable box, and in which the carbonic acid is produced by the action of tartaric acid on the sodium bicarbonate.

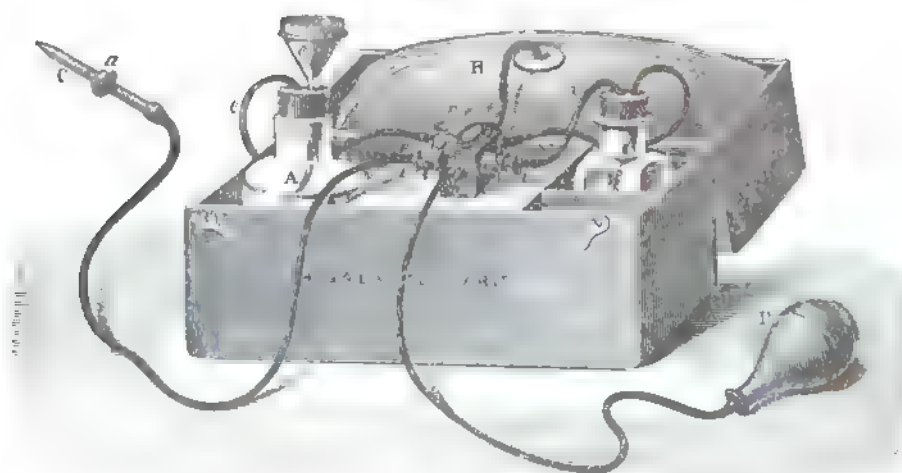
The apparatus (Fig. 1) is composed of a box with compartments occupied by (1) a carbonic acid generator, A; a wide-mouthed bottle resembling a wash-bottle, B (the *barboteur*, or mixing-bottle), and (3) an injector, I, a pear-shaped rubber ball, P, and a canula, C, etc. The canula C, with its tube, are the only parts which are outside of the box during the working of the apparatus. The injector I, whose operation depends on a play of valves, *i* and *i'*, is a solidly-fixed metallic box, connected with all parts of the apparatus by means of tubes, *r*, *r'*, *t*, with their faucets and stop-cocks.

The gas furnished by the generator A escapes by the tube *a*, which is connected by the faucet *r* with the central metallic piece I, whence it issues by the tube *t* to enter the reservoir R. Here it is retained by the resistance of the liquid in the wash-bottle B. When once the bag R is filled, the apparatus is ready to work. The operator squeezes the ball P, forcing out the air which it contains, and which escapes by the valve *i'* and canula. Then the ball expands by its elasticity, exercises its suction-power, and fills

* Maurice Dupont, "On Inhalations and Injections of Carbonic Acid" (*Bull. de Thérap.*, 1887, t. cxii. p. 24).

† See and compare Bergeon, *Acad. des Sciences*, July 12, 1886; Congress of the French Association for the Advancement of Sciences, Nancy, August 20, 1886; *Acad. de Méd.*, November 2, 1886; Cornil, *Acad. de Méd.*, October 19, 1886; Morèl, "New Treatment of Affections of the Respiratory Passages and of Blood-Poisonings by Rectal Injections, Cure," Paris, 1886; Dujardin-Beaumetz, "The Gazo-Rectal Injector of Dr. Bardet," *Acad. de Méd.*, November 9, 1886; also "On the Treatment of Pulmonary Affections by Gaseous Rectal Injections," *Bull. de Thérap.*, t. cxi. p. 449.

FIG. 1.



itself with gas from the reservoir R. This gas first passes out of the reservoir, and under suction influence enters the receptacle B by the tube *v*, which dips down to the bottom of the vessel, where it becomes charged with medicinal vapors; then it escapes by the exit-pipe *v'* to enter the injector, which it then fills, as well as the rubber ball P; the operator now presses the ball and forces the gas out through the valve *r'* and the canula C, and continues so to do till the rubber bag, which holds just four litres, is emptied, which event makes itself known by the rubber ball remaining collapsed after being squeezed. To prepare the apparatus for use, you proceed in the following way:

1. Pour into the receptacle B enough to fill it half full of the medicinal solution which you propose to use (sulphur waters, carbon bisulphide water, warm water holding in suspension iodoform, terpinol, eucalyptol), then put in the stopper.

2. Place in the generator A the contents of a package consisting of sixteen grammes of tartaric acid with twenty grammes of bicarbonate of sodium,—a quantity necessary to generate four litres of carbon dioxide. Fill the generator half full of water by means of the funnel *c*, and shake the flask.

3. Have care to drive all the air out of the apparatus by four or five squeezes of the rubber ball before introducing the canula.

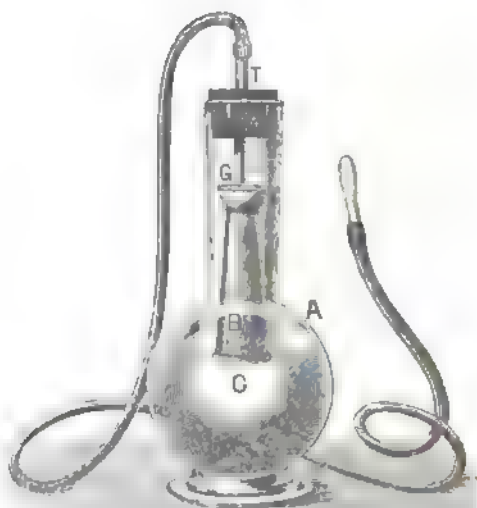
4. The injection should be made slowly and without force; there ought to be an interval of from ten to fifteen seconds between the successive pressures made on the injector, and the entire operation should last from twenty minutes to half an hour.

As for the apparatus of Faucher, it is com-

posed (1) of a flask, A (see Fig. 2), which receives the sulphuretted water and a package of sodium bicarbonate; (2) of a reservoir, B, which is filled with bisulphate of sodium; this reservoir is connected with an escape-pipe, which traverses the rubber cork which closes the flask; (3) of a rubber tube ending in a canula.

To work the apparatus you plunge the lower part of the reservoir B into the alkaline water by pressing on the, pipe T. The

FIG. 2.



gas escapes slowly and penetrates the intestine when the pressure is sufficient. If you wish to stop the liberation of gas, you raise the reservoir out of the water by drawing on the pipe T.

The working of the apparatus is then automatic; the liberation of gas is slow enough

not to cause distention ; the quantity is regulated by the amount of salts employed, and patients can manage this apparatus very well themselves.

Whatever be the apparatus or method employed the principle is the same, and it now remains for us to study the application and uses of the various substances introduced into the economy by the means above described.

Bergeon, in a recent communication to the Academy of Sciences (June 25, 1887), insists on the necessity of operating with carbonic acid gas which is absolutely pure ; for if it is impure, or if it has remained a long time in the rubber bag, it loses the property of passing out by the lungs, and, accumulating in the intestine, causes meteorism and colic. As it is very difficult to purify carbonic acid, it is desirable to contrive some way of obtaining it pure at first by making use only of substances that will produce gas of a good quality.

I have already referred to sulphuretted hydrogen, and told you that since Claude Bernard's discovery we find ourselves able with impunity to introduce quite large quantities of this gas per rectum without determining toxic symptoms ; we have just repeated Bernard's experiment in our laboratory in the following way :

Taking a middling-sized dog, we injected one hundred and thirty cubic centimetres of the gas by the rectum. Test-paper moistened with acetate of lead and placed before the nostrils of the animal blackened at the end of fifty seconds, and the dog, which was not muzzled or tied, remained quiet without appearing to be at all incommoded. The sulphuretted hydrogen, then, seems to have been promptly eliminated, for a few minutes only after the end of the injection the animal's breath no longer blackened the test-paper. It is by such experiments that we have been convinced that we may without danger apply to man the injections of sulphuretted hydrogen, but with the condition that the gas shall be free from air, and that the injection shall be made slowly. Dr. Bergeon advises the use of the natural sulphur waters only, having observed that the artificial sulphur solutions are often irritant. This, however, is not necessarily the case, and the main thing is to see that the sulphuretted hydrogen is pure.

In our hospital service we use the following solutions, and according to the process given below :

I. SULPHUR SOLUTION.

R Pure sulphide of sodium, 10 grammes ;
Distilled water, q. s. to make 100 cub. cent. M.

2. ACID SOLUTION.

R Tartaric acid, 25 grammes ;
Salicylic acid, 1 gramme ;
Distilled water, q. s. to make 100 cub. cent. M.

We introduce into the glass mixing-bottle of our apparatus five cubic centimetres of each solution, a mixture capable of setting free fifty cubic centimetres of perfectly pure hydrogen sulphide ; this is dissolved in two hundred and fifty cubic centimetres of pure water, and it is through this mixture that the carbonic acid is made to pass.

I have employed the bisulphide of carbon in the form of carbon bisulphide water, whose preparation and uses I have pointed out to you in previous lectures, and especially under the head of intestinal antiseptis ;* this water may be put just as it is into the mixing-bottle.

You see that we may vary almost to an unlimited extent the number of substances capable of being absorbed by this process, but I will indicate only the principal : we have, for instance, employed eucalyptol, terpinol, iodoform, this last substance being solid was held in suspension in warm water ; lastly, we have made use of carbonic acid alone.

How has this mode of treatment been borne by our patients ? In a certain number of cases we have seen the cough diminish, the expectoration modified, and the respiratory distress abated ; some have recovered their ability to sleep and their appetite. These happy results, whenever we have obtained them, were due to the union of carbonic acid gas with sulphuretted hydrogen.

Fraentzel, of Berlin, and Statz have published through the Medical Society of Berlin the results of their observations on the efficacy of the method of gaseous rectal injections, and their results agree completely with those which I have observed.

The discussion which took place recently in New York on Bergeon's method, on the occasion when Kinnicut, Bruen, Shattuck, Pepper, Wood, Beverly Robinson, etc., gave an account of the results which they had witnessed from these gaseous injections, eventuated in conclusions which are in harmony with those which I had adopted from trials which I had personally made, and show

the superiority of the combination of carbonic acid with sulphide of hydrogen over all other antiseptic bodies.

Eucalyptol, on the contrary, has given me nothing but bad results in these rectal injections. I have always seen patients grow worse after its employment; there has been an increase of the irritation under which they were suffering, and lessening, if not complete disappearance, of appetite. Terpinol has seemed to me superior to eucalyptol, but yet inferior to hydrogen sulphide.

It has seemed to me, in the conditions in which my trials with this agent were made, that iodoform did not amount to anything, and I judge that it is absorbed in too feeble quantity to have any real antiseptic effect.

You know, moreover, that if the antiseptic action of iodoform is incontestable, its anti-tuberculous action is, on the contrary, disputed by some authorities, and especially by Rovsing, of Copenhagen, who has shown that in giving experimental tuberculosis to animals by intraocular inoculation, the course of the disease is not at all hindered by the combination of considerable quantities of iodoform along with the inoculation material. At the same time these facts have been contested by Bruns, who, in a recent communication to the Congress of German Surgeons, endeavors to show by direct experiments made on tuberculous abscesses that the action of iodoform is both specific and antibacillary. This is, however, a question still unsettled, and to be decided by future study. With regard to the action of carbonic acid when used alone, it has seemed to me to play the part of a sedative of the nervous system.

But before concluding this topic I wish to call your attention to a fact noticed by my colleague, Chantemesse, and which we have verified many times in our practice. Even in patients that manifested a marked improvement, we have not been able to note any change in the approximate number of tubercle-bacilli in the sputum. This is a fact to be remembered, showing, as it does, that if by the employment of gaseous rectal injections we may be able to improve the condition of our patients, the cause and the germ of the disease have escaped the action of the medicament.

It remains for me, gentlemen, before finishing this lecture, to speak to you of a new and very interesting method, which was first employed in pulmonary antiseptis. I refer to hypodermic injections with a mineral-oil basis. I speak of this method here because its first applications were made with a reference to the

subject which especially occupies us at this moment; but it is, as you know, of much more general application, and which has given to hypodermic medication a surprising and unlooked-for extension. One drawback of the hypodermic method, in fact, was its inapplicability the moment we wished to utilize substances little soluble or at all irritant, hence the desideratum of some such vehicle as we have now found; and, thanks to the employment of *liquid vaseline*, we may now inject under the skin substances which are highly irritant, such as eucalyptol, sulphide of carbon, and iodoform.

First pointed out by Pierre Vigier as applicable to hypodermic injections, it was my colleague, Balzer, who, in his service at the hospital Lourcine, was the first to utilize liquid vaseline as an excipient for subcutaneous injections of the salts of mercury, both soluble and insoluble. Shortly afterwards Dr. Albin Meunier, of Lyons, published a series of formulæ for hypodermic injections with a basis of liquid vaseline holding in solution various antiseptic substances, and he announced that these solutions might with impunity be injected under the skin, and without provoking any inflammatory accidents. At my request Dr. Albin Meunier sent me his products, and I was able to note in my practice the reality of his assertions. At the present time this method is actually in vogue, and is a part of current practice. It has already been in my hospital the subject of interesting researches, among which I may cite the studies of De Ley,* and of my pupil Caravais, who has made it the theme of his inaugural thesis.†

Let us inquire into this subject of liquid vaseline, for it is important to have a clear idea of what, in medical usage, we are to understand by the term. The petroleums have a variable composition according to their origin, and those of America are not comparable with those of Caucasus, or even those obtained from Europe. This variable composition explains why the petroleums do not furnish identical products on distillation. In distilling petroleum you obtain, between the temperature of 40° and 200° C., and even higher, variable bodies which are utilized in the arts. At first the petroleum ethers come over, which are so much employed to-day in our laboratories, then the illuminating oils,

* Ley, "On Antiseptic Hypodermic Injections with a Basis of Mineral and Vegetal Oil in the Treatment of Pulmonary Complaints" (*Bull. de Thér.*, t. cxii. p. 246).

† Caravais, "A Study of Liquid Vaseline as a Vehicle in Hypodermic Medicine" (*Thèse de Paris*, 1887).

and lastly, towards the end of the operation, we obtain paraffine and a liquid substance which is employed in the arts for machine oiling. It is this substance, purified and decolorized, which Albin Meunier has employed for subcutaneous injections, and which, according to the quantity of paraffine it contains, has a density between 0.810 and 0.870. This substance, which is liquid, of thin, syrupy consistence, ought, for official uses, to be absolutely neutral in order to be readily tolerated by the tissues. It dissolves a great number of bodies, and in particular, chloroform, bromine, iodine, iodoform, sulphide of carbon, myrthol, eucalyptol, terpinol, hydrogen-sulphide, etc. Bocquillon, moreover, has given us a very complete list of formulæ for hypodermic injections having for their vehicle liquid vaseline, a list which I have reproduced in my "Formulary."*

It was important, for the benefit of medical practice, to decide on a name for this new substance. While recognizing the fact that the word *liquid vaseline* is improper, since the substance recommended under this name by Albin Meunier is not vaseline, it has seemed to me to be best to keep this name, which was given by the discoverer; and if you say in your prescriptions *medicinal liquid vaseline*, you will sufficiently indicate the conditions of purity and of neutrality which the product ought to have. It was necessary to decide this point, for there exist in commerce certain so-called "liquid vaselines" which are only mixtures of petroleum and of vaseline, and which, even when tolerably pure, may give rise to very serious inflammatory accidents, as we have had occasion to find out.

The mineral oils do not alone possess the property of dissolving the different substances of which I have just spoken, and you can use in the same way the oils of earth-almond (*Arachis hypogæa*), and even olive and linseed oils, taking pains first to sterilize them by heating.

It remains now to state the results obtained by means of these new methods of injection in pulmonary antiseptis. I should have told you before that these liquids are admirably borne by the economy, and rapidly diffuse themselves through the organism.

Sulphuretted hydrogen and bisulphide of carbon seemed at first to produce good effects, but this salutary action did not long continue,

and these medicinal agents give much less favorable results when administered in this way than when given in the form of gaseous rectal injections.

Iodine works well in the forms of tuberculosis with abundant bronchial secretion; it rapidly diminishes the cough, expectoration, and oppression. It is especially in the employment of eucalyptol that this method has rendered us real service. This is the formula proposed by Albin Meunier:

R Pure eucalyptol, 5 parts;
Medicinal liquid vaseline, 20 parts. M.

I have modified this formula, and now make use of solutions of equal parts. When the eucalyptol is perfectly pure, injections of a solution of equal parts of eucalyptol in vaseline, in the dose of a syringeful (one cubic centimetre), and repeated night and morning, never cause any local irritation.

Roussel, of Geneva, who is the most ardent advocate of injections of eucalyptol in the treatment of tuberculosis, and Professor Ball, in a communication made this year to the Academy of Medicine, have reported the results of trials made in their respective hospitals with eucalyptol injections. In one case, the bacilli had disappeared from the sputa of a phthisical patient. In the reply which I made to the communication of Professor Ball I showed in this connection that eucalyptol acts only on the bronchial element, and that in certain cases of phthisis, attended by much fever, it is rather dangerous than useful. This view has been confirmed by a great number of my *confrères*, and in particular by Bouveret and Péchadre, of Lyons, Laplane, of Marseilles, and Biot, of Macon, who have come to conclusions absolutely conformable to those which I had laid down, and of which the following is a *résumé*:

Eucalyptol is generally well borne by patients; at the same time it presents certain disadvantages. Some complain of the disagreeable and persistent odor of the breath, a result of the exhalation of eucalyptol by the lungs; in others, the diminution of expectoration brings on dyspnoea. Eucalyptol is, then, chiefly a modifier of the bronchial secretions, and is in no sense a specific against tuberculosis; in fact, in all the researches which we have made, we have never seen disappear from the products of expectoration the characteristic bacilli, and if injections of eucalyptol give relief to patients, they do not cure the disease.

Nevertheless, this way of administering

* Bocquillon, *Mem. et Bull. de la Soc. de Thér.*, 1887; Dujardin-Beaumetz, "Formulaire de Thérapeutique," 1887.

eucalyptol ought to be retained in therapeutics, for when in pulmonary phthisis we can lessen cough and expectoration, and restore to our patients appetite, and with appetite strength, we have done them an inestimable service, and this is a part of our duties as practitioners, which we have no right to make light of in the treatment of a disease whose daily victims are so many.

Continental physicians seem of late to have come back again to the method of inhalations, which had almost been abandoned, and I shall here merely refer to certain new processes, which tend to show that this method may in many cases give good results. Dr. Hue, of Rouen, has experimented in pulmonary phthisis with inhalations of boiling aqueous solutions of picric acid. The results thus far have been encouraging, but too meagre to warrant us in as yet formulating a definite judgment as to the efficacy of these inhalations. I would call your especial attention to the experiments which have this year been going on in our hospital with the atmometer of Professor Jacobelli, of Naples,* and the recent trials with inhalations of sulphurous acid.

Professor Jacobelli, who has before made known to the French medical public his method of caustic inhalations, had the extreme kindness to come from Naples with his new apparatus, which for the past two months has been operated under his direction in our hospital. What has hitherto been lacking was precision in the methods of inhalation, but Dr. Jacobelli has admirably succeeded in meeting this want by his atmometer, which I now show you.

This apparatus is composed essentially of a perfectly tight cubical glass box, whose capacity is accurately gauged; this capacity may be increased or diminished at will by moving back and forth a glass diaphragm, which plays in an air-tight mortise; a scale registers the amount of displacement of this diaphragm. A number of taps afford communication with this cubical box by means of attachments of rubber tubes, some of which end in mouth-pieces, and some simply connect different parts of the apparatus with the central chamber. The whole rests on a flooring, and is light enough to be easily transported from place to place. One quite ingenious feature of the atmometer is the valve placed at the extremity of the inhaling tube; this valve enables the patient to inhale the medicinal substances contained in the atmometer, but obliges him to expire in free air. To this part of the atmometer are adapted a pneumodynamometer, a thermometer, and a pneumetrograph, apparatus which indicate the force of respiration, the

temperature of the inspired air, the quantity of air which enters at each inspiration, and even the number of inspirations.

With the atmometer we may use vapors, medicinal powders, and pulverized liquids. When it is desired to subject the patient to the vapor inhalations, the operator brings into use a closed iron cylinder, which is heated by a spirit lamp, and communicates with the interior of the cubical box of the atmometer. A graduated funnel enables one to gauge exactly the quantity of liquid which is to be vaporized.

In employing medicinal powders a rubber hand-ball on one side of the atmometer is made use of; this, by successive squeezes, forces the medicinal powders into the chamber of the atmometer.

To gauge the quantity of powders thus introduced into the cubical box, Jacobelli has employed an ingenious artifice. On each of the lateral and opposite sides of the atmometer is written the word *Pulvidensimètre*. This word forms fourteen distinct images on the inner (glass) faces of the apparatus, when the chamber is free from the medicinal dust, but as soon as the powder enters the compartment, diffusing itself through the air, it obscures the images reflected on the glass sides, and they become more and more faint and disappear in proportion as the quantity of powder admitted is considerable. One can thus, by the number of images made to disappear during the process of inspiration, estimate the quantity of powder contained in the compartment.

For the atomization of liquids two air-pumps placed on the sides of the atomizer, and worked by peculiar handles, enable the operator to exhaust the air in the atmometer, and bring into use certain rubber-ball injectors of various forms and patterns. By these the atmometer is dosed with any required liquids, which the patient inhales through his breathing-tube.

Such are in brief the principal arrangements of the apparatus of Jacobelli. They have for their end to fulfil the following indications: first, to gauge as far as possible the quantity of medicinal substances in the form of powder and vapor, for inhalation, then to make of a single apparatus a vaporizer, inhaler, and atomizer. Let us now examine the therapeutic applications of this atmometer.

I shall speak here only of the results obtained in our hospital in affections of the lungs. Taken as a whole, these results have been advantageous, as you can judge by the following statement:

Ten patients were affected with pulmonary disorders; four were chlorotic; one presented marked dilatation of the stomach. The ten patients with lung-diseases were affected as follows: two were subjects of hæmoptysis, two had chronic emphysema, one gangrenous bronchitis, and five others were tuberculous.

The patients suffering from hæmoptysis had their bronchorrhagia arrested with extreme rapidity by breathing the air of the atmometer put in communication with a reservoir containing vaporized perchloride of iron. The

* Jacobelli, "On Caustic Inhalations" (*Bull. de Thérap.*, 1887, t. cxii. pp. 105 and 166).

effect of this treatment was so well marked in these two patients, and in particular in one of them whose hæmoptysis was twice arrested under the influence of these inhalations, that we could not but attribute to their use the cessation of the hemorrhage. At the same time, we ought to bear in mind the fact that in our experiments on animals, and in placing ourselves in the same conditions, we have never been able to detect the presence of perchloride of iron in the interior of the air-tubes.

In two patients affected with chronic bronchitis and emphysema, the inhalation of air charged with vapors of turpentine and iodoform dissolved in ether has produced a marked amelioration. This improvement has pertained to the expectoration and dyspnoea, which have both remarkably diminished.

In the case of the tuberculous patients who have been subjected to the inhalations of turpentine and iodoform, the gain pertained chiefly to the expectoration and cough; we noticed no lessening in the number of bacilli in the sputum. As for the fever, if in certain cases it has been allayed by these inhalations, in others it has not been at all influenced.

Lastly, in the case of superficial gangrene of the bronchi we noticed under the influence of these same inhalations a diminution in the quantity and odor of the sputa.

As you see, Professor Jacobelli has given a notable progressive impetus to atomization, enabling us to utilize to better advantage than we have ever done before the method of inhalations. I come now to the experiments made with sulphurous acid.

It is only since the communication made to the Academy of Medicine, March 8, 1887, by Dr. Solland, that the attention of the medical public has been called anew to inhalations of sulphurous acid. In his paper Dr. Solland reports the radical cure of a case of pulmonary phthisis as the result of a prolonged sojourn in a sulphurous atmosphere. The patient was a man, 26 years of age, sergeant in a regiment of marine infantry at Cherbourg; this man was manifestly tuberculous, and his sputa contained a great number of Koch's bacilli. Placed in charge of some workmen commissioned to disinfect the wards of the hospital of Cherbourg by the combustion of sulphur, this sergeant derived so much benefit from the inhalations of sulphurous acid in the lung-troubles from which he was suffering, that he continued to sojourn a long time in rooms where sulphur was burning, and at the end of a certain period he was so far restored that

the bacilli had disappeared from the sputa, and the stethoscopic signs of phthisis no longer existed.

In view of this fact, Dr. Solland has endeavored to make the method of general applicability, and this is his mode of procedure: In a confined apartment he burns a quantity of sublimed sulphur in the proportion of twenty grammes per cubic metre, then he waits twelve hours and causes the patients to enter the room where the sulphur was burned, and remain there for a space of eight hours.

We have reproduced these experiments in our hospital, but under somewhat different conditions, on account of the construction of our barracks, which give a too ready escape to the sulphurous acid. We first burn five grammes per cubic metre, then ten, then fifteen, and finally twenty grammes, and two hours afterwards we introduce into this room our patients, who sojourn there four hours. Under the influence of this treatment we observe a speedy change in the expectoration, the cough diminishes, and the patients sleep much better. These experiments are still too recent for us to be able as yet to pronounce a definite judgment as to the utility of these inhalations; they seem, however, to be perfectly harmless, and not to provoke hæmoptysis, as at first we feared they would. Among the patients under experimentation I have, in fact, chosen certain persons who had been much subject to hæmoptysis, who have not seen their hemorrhages return under the influence of these inhalations.

Dr. Auriol, of Bellegarde du Gard, having noticed in workmen who are constantly exposed to the fumes of burning sulphur the beneficial action of these inhalations in pulmonary affections, has treated seventy tuberculous patients by this method, and has observed several cures, and in every case amelioration.

If you desire in your private practice to repeat these experiments with sulphurous acid inhalations, I advise you to proceed in the following way: Select a room of small size; take its exact cubic dimensions, stop the chimney, and close the windows and doors; then burn a quantity of sulphur, which you can make to ignite by means of alcohol poured over its surface; begin with small quantities, as five grammes per cubic metre, and increase every day by five grammes to twenty grammes. Two hours after the completion of the combustion admit your patients into the room, and let them remain there four hours.

While we were experimenting with these inhalations, one of our licentiates, M. Villi,* found another very ingenious mode of introduction of sulphurous acid. Recalling to mind that medicinal liquid vaseline had already served as a vehicle for sulphuretted hydrogen in subcutaneous injections, he conceived the idea of utilizing this liquid vaseline for the introduction of sulphurous acid. When you shake together sulphurous acid and liquid vaseline, the latter absorbs a variable quantity of the gas, according to the temperature. At 8° C., for example, one hundred grammes of liquid vaseline absorb 1.30 grammes to 1.50 grammes of anhydrous sulphurous acid. It is this solution which we have employed for subcutaneous injections in our tuberculous patients, and we have thus had another series of experiments alongside of those undertaken with the inhalations of sulphurous acid.

Note, first of all, that these injections are scarcely at all painful, and are never accompanied by phlegmons, even when five cubic centimetres of this solution are injected at one time. These injections must be made in the place indicated by Smirnoff,—namely, the hip muscles of the retro-trochanteric fissure.

The results obtained have been the same as those which attended the inhalations of sulphurous acid, but with much diminished intensity; and it is always the change in the expectoration, the lessening of the cough, and the production of more natural sleep, that patients insist upon as a consequence of this treatment.

What becomes of the sulphurous acid thus introduced under the skin, and under what form does it enter the blood? How is it eliminated, and what is its mode of action? These are questions for whose solution we have undertaken a series of physiological experiments, which you will find described in the thesis of my pupil Dr. Darieix.

As for the future of these inhalations, this is quite uncertain, and we shall not be able to pronounce positively on this subject till a sufficient number of facts have been obtained to justify formal conclusions.

I have now completed what I wished to say respecting the new antiseptic methods, and have, I think, sufficiently indicated the promise of future advantage held out to us in this direction, as well as the great extension of therapeutic resources likely to accrue therefrom.

* Villi, "On the Employment of Sulphurous Acid in Hypodermic Injections" (*Bull. de Thérap.*, t. cxiii., 1887, p. 132).

CONTRIBUTION FROM THE LABORATORY OF
EXPERIMENTAL THERAPEUTICS, UNIVERSITY OF PENNSYLVANIA.

THE PHYSIOLOGICAL ACTION OF CIMICIFUGA RACEMOSA.

BY RANDALL HUTCHINSON, A.M., M.D.†

SOME of the preparations of cimicifuga have been more or less extensively used by both regular and eclectic practitioners for the past fifty years; yet no accurate study of the drug has ever been made, save that which clinical experience alone has taught us.

On what its remedial properties depend has never, so far as I can learn, been isolated. Two resins, an acid principle (which is possibly an alkaloid), starch, tannin, gum, and a volatile principle have been found in it. The latter, Dr. George B. Wood thinks, is the active principle, since the drug deteriorates by keeping.

When 90 minims of the officinal fluid extract were hypodermically injected into the side of a healthy male rabbit (weight, 2½ pounds), the chief symptoms noticed, after fifteen or twenty minutes, were those of a sedative and quieting agent, the rabbit manifesting a disposition to sit in one place, being unwilling to move around unless made to do so, and when taken up in the hand did not struggle nor endeavor to free itself, but remained passive and quiet even when laid on its back. There was no motor paralysis. The respirations were noticed to become somewhat slowed, and the pupils slightly dilated.

Turning now from this simple experiment on the rabbit to the frog, we find, when a sufficiently large quantity of the drug (30 minims) is injected into the posterior lymph-sac of a moderate-sized frog, in a few minutes symptoms of apparent motor paralysis come on, so that the frog will lie passively on its back, with its limbs extended and perfectly relaxed. At the same time it is noticed that the batrachian rapidly becomes cyanosed, and that there is a progressive failure of the respiratory movements.

When the frog was fully under the effects of the drug, neither direct irritation with a needle nor burning of its feet elicited any response of pain or motion.

It was proven that this paralysis was not due to an implication of the motor apparatus by the fact that the frog possessed the power

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of voluntarily drawing up its limbs till the point of death.

When the sciatics of the paralyzed limbs were exposed and galvanized by a current from a single cell of a small battery, we got the usual response in the tributary muscles. It was further shown, by the tying of the artery of a frog's leg close up to the body, thereby protecting that limb from the direct effects of the drug on its nerves and muscles, and injecting the drug as above, that the paralysis came on in that protected leg *pari passu* with the unprotected parts, proving that this paresis was not due to a peripheral or trunkal nerve influence.

That these experiments were correct was also shown by the non-appearance of the above symptoms of loss of reflex action and paralysis when an artery was tied and the drug injected directly into the protected limb. From these experiments, carefully repeated, it would therefore seem that this drug, cimicifuga, is a direct sedative, and in large doses paralyzant, to the frog's spinal cord, exerting its dominant effect on the receptive centres or the afferent nerve apparatus, and perhaps, to a limited degree, on the efferent nerves.

On the circulation the action of cimicifuga is a decided depressant, a fact which was strongly pointed out by the clinical evidence of Dr. N. S. Davis (*Trans. Am. Med. Assoc.*, vol. i. p. 351, 1848), and also by Dr. F. N. Johnson (*Reports N. Y. Hospital*), and confirmed by the following experiments.

When the cut-out frog's heart is thrown directly into the undiluted preparation its beats are decidedly slowed, and after a few contractions it is stopped in diastolic arrest; yet when removed, if it has only remained in the solution for a minute or two, seems capable of responding to direct stimulation.

When the drug is dropped upon the exposed frog's heart *in situ* it seems to act, so far as the eye can discern, in a similar manner, stopping that viscus in diastolic arrest.

From these experiments, carefully repeated, it would seem to be conclusively proven that this drug, cimicifuga, has a direct depressing action on the frog's heart, acting either on the cardiac muscle or on its contained ganglia.

The experiments made on the higher animals,—the dog and rabbit, for example,—which now followed, show that the drug seems to affect the mammalian circulatory system in much the same manner as that of the lower forms of life.

It is evident from the accompanying tables,

taken from the tracings of the kymograph, that when a sufficiently large quantity of this drug is thrown directly into the circulation (jugular vein) it causes the arterial pressure to fall and the force and frequency of the pulse to be diminished.

The following table of tracing, as taken by the kymograph, on dog (weight, 15 pounds), shows fall in blood-pressure and slowing of pulse-rate after injection of drug into jugular vein. Dog afterwards killed.

Time. A.M.	Drug.	Pressure.	Pulse.	Remarks.
11.45	166-176	158	
11.45.10	5 c.c.	164-170	158	Injection begun.
11.45.20	166-130	162	Injection ended.
11.45.30	120-88	130	
11.45.40	84-102	126	
11.45.50	102-140	102	
11.46	140-146	108	
11.46.10	166-176	132	
11.46.20	162-164	126	

That this slowing of the heart's action is not due to inhibitory stimulation, either centric or peripheral, is proven by the fact that it takes place just the same when the vagi nerves are cut, thereby isolating the heart from its inhibitory centres; neither is it due to peripheral influence, for on galvanizing the vagi, before and after injecting the drug, the relative slowing is equally as great at one time as at the other.

The following table of tracing, as taken by the cardiograph, on dog (weight, 8½ pounds), shows fall in pressure and reduction in the pulse-rate after injection of 2 c.c. of drug into jugular vein, and after section of both vagi nerves. Dog afterwards killed.

Time. P.M.	Drug.	Pressure.	Pulse.	Remarks.
4.45	134-108	150	Vagi nerves cut.
4.45.10	2 c.c.	136-104	144	Injection begun.
4.45.20	130-66	120	Injection ended.
4.45.30	76-112	102	Respirations very slow and shallow.
4.45.40	116-144	120	
4.45.50	130-154	120	Dog struggled.
4.46	120-146	138	
4.46.10	104-122	132	
4.46.20	102-116	132	

The slowing must, therefore, be due to a direct action of the drug on the cardiac muscle or its contained ganglia. This fact is also in direct accord with its action on the isolated frog's heart.

To explain the fall in the arterial pressure is not so easily or satisfactorily done.

Here the question arises, Is the fall in

pressure due to the diminished cardiac rapidity and force? Undoubtedly this is a most important factor in the primary fall, but does not, I think, account for the continued low pressure after large doses have been administered.

Indeed, the following experiment would seem to show quite clearly that the depressed heart does not alone account for the lowered arterial pressure, but that the vaso-motor system is depressed or paralyzed by the administration of large doses.

Injected 10 c.c. of the pure fluid extract directly into the circulation (jugular vein) of a small-sized dog (weight, 22½ pounds); almost instantly the pressure fell to within a few millimetres of the abscissa line. After two or three deep respirations the respiratory movements ceased, the pulsations of the heart became slower and slower and more labored, but it continued to pulsate for some seconds after the respirations had ceased. Yet during this period of asphyxia there was no rise in the arterial pressure, proving that the vaso-motor centres must be in a state of paralysis, and not capable of responding to the asphyxial stimulus.

From these experiments it is indicated that the diminished arterial pressure is due, first, to the direct depressing action of the drug on the heart itself; and, secondly, when in large doses, to the combined action on the heart, and a paralyzant to the vaso-motor centres at the base of the brain.

On the respiratory system large doses of *cimicifuga* lessen the number of respirations per minute, causing them to become slow and shallow, altering the rhythm, and finally stopping them completely, while the heart continues to pulsate for some seconds. Since these phenomena occurred equally after section of the vagi, they must be due to the action of the drug exerted upon the respiratory centres at the base of the brain.

When full therapeutic doses of the drug are taken into the human system, it produces a sense of fulness of the head, giddiness, intense frontal headache, dimness of vision, and vertigo, with a feeling of general malaise and aching of the limbs.

The reduction in the force and frequency of the pulse is, according to Dr. N. S. Davis (*Trans. Am. Med. Assoc.*, vol. i., 1848), a constant symptom after the administration of *cimicifuga*.

In some instances it causes nausea and vomiting, some looseness of the bowels, and occasionally purging.

TEREBENE FOR THE RELIEF OF DYSPNŒA.

By D. M. CAMMANN, M.D., NEW YORK.

TEREBENE in a general way may be said to possess properties similar to members of the group of terebenthinates the healing effects of which have so often been vaunted in the treatment of bronchial affections and diseases of the lungs. It is prepared by the action of sulphuric acid upon oil of turpentine. It is less irritating when applied to the skin or taken internally than oil of turpentine. In many cases it at first increases secretion from the bronchial mucous membrane, but almost invariably in a few days, and usually at once, it causes a diminution of bronchial secretion. Dr. Murrell, of London, has proved that in the proportion of one to five hundred it checks, and of one to one thousand prevents, fermentation, and from these experiments he proposes it as a remedy in emphysema, flatulence, etc. Articles by Murrell* and Suckling† speak favorably of its use. In a paper by myself, read before the New York County Medical Society (*N. Y. Medical Record*, October 8, 1887), its use in diseases of the lungs is strongly advocated.

The symptom upon which terebene seems to have the most marked effect is dyspnœa. This is probably due partly to a stimulating action on the heart and to a contraction of the smaller blood-vessels, partly to astringent properties and diminution of the secretion from the bronchial tubes, and partly to the relief which it affords to the flatulence with which so many of the patients suffering from emphysema and other forms of lung-trouble are afflicted, and thus allowing full play to the diaphragm by removing pressure from below. During the past year careful histories of a number of cases have been kept for me by Dr. W. L. Carr in which terebene has been prescribed. Some of the cases have already been published. I give some additional cases below:

CASE I.—Emphysema; George N., æt. 38, cigar-maker; November 23, 1886; his family history is good.

Present History.—From twenty-six years of age had a winter cough; when twenty-eight was coughing, and expectorated about a half-cupful of dark blood; coughed after that, but expectoration was not bloody; after

* Murrell, "Pure Terebene in Treatment of Winter Cough" (*Brit. Med. Journal*, December 12, 1885).

† Suckling, *Ibid.* (*Brit. Med. Journal*, March 20, 1886).

three days spat up a little more blood; no pain in chest; no fever; expectoration was quite free; sputa dirty; did not lose in flesh; thinks that he grew stouter. Since then has coughed more or less, winter and summer; always more in winter; expectoration has sometimes been streaked with blood, but he has never had profuse hæmoptysis; for the past few days has expectorated "lumps of blood"; some soreness on left side.

Present Condition.—Well nourished; no fever or sweats; dyspnœa on exertion, but not otherwise; never at night; coughs most in the morning; expectoration not always easy; sputa generally yellowish-white; some pain on left side, in mammary region; appetite good; bowels not quite regular.

Physical Examination.—Chest well developed, and thickly covered with adipose tissue; pulmonary resonance on percussion; harsh respiration under both clavicles and at both bases behind; expiration a little longer than inspiration over both lungs; respiration feeble at bases of both lungs in front; coarse râles at bases of both lungs in front in axillary and infrascapular regions; right side, in front, cog-wheel respiration. *Rhus aromatica*, ℥ xx q. i. d.

November 27.—Expectoration this morning was blood-stained, afterwards thick with blood. Since last entry expectoration and cough somewhat increased; thinks that he took cold just before beginning the use of the *rhus*; some pain in left side; appetite and bowels good; urine free and more in quantity.

November 30.—Hæmoptysis still continues; urine increased in quantity; appetite improved; cough less frequent. Discontinued above and gave terebene, gtt. xv q. i. d.

December 4.—No blood since Monday (five days); expectoration white; does not cough as much; bowels loose; appetite fair; urine about the same.

December 11.—Bowels loose; urine more free; coughs more than he did; not as much mucus expectorated; sputa dark, not yellow; pain on left side; no hæmoptysis.

December 28.—No blood; expectoration not so free,—only in the morning, not during the day; no pain; appetite fair; bowels open twice a day; urine same; thinks that he has eructations of wind after the terebene; tongue is clean.

January 13, 1887.—Raised a little blood-streaked sputa last week; still coughs in the morning, but not during the day. Terebene continued.

January 25.—Has been coughing more than usual during past two or three days; no blood; hardly any pain. Discontinued terebene; a catarrhal condition of nasal passages. Cough-mixture was ordered, maltine and compound syrup of hypophosphites.

January 29.—Catarrhal condition referred to above is better; has been troubled with catarrh during the winter for a number of years. Stop cough-mixture; R Terebene, gtt. xv q. i. d.

February 19.—Some catarrhal ozæna; coughing some in the morning; expectoration during the day; sputa yellowish and white, sometimes frothy; no blood; appetite good; bowels regular; is working three or four days a week. Maltine and cod-liver oil; terebene.

March 1.—Hæmoptysis last night; blood not very much; no cough in the morning; shooting pains in chest.

CASE II.—Bronchitis and asthma; Margaret M., æt. 45, washerwoman; February 1, 1887.

She has had muscular and subacute articular rheumatism. She is subject in the winter to colds. Began to be short of breath last August; now she is short of breath on exertion and when lying down; cannot sleep except in a chair; coughs most in the morning; expectoration after a long paroxysm of cough; sputa white, sometimes frothy; pain in chest and between shoulders; is feverish and at times has profuse perspiration; appetite fair; bowels not regular. She gives a history of asthmatic attacks, and physical examination shows the presence of bronchitis.

Treatment.—Terebene, gtt. x q. i. d.

March 15.—Much improved; condition generally better; dyspnœa and cough less; expectoration easier; urine free; bowels moved with pills. Terebene increased to ℥ xv, in mucilaginous mixture.

March 22.—Breathing easier; don't cough, except a little early, when waking; expectoration easy, and sputa white; appetite fair; bowels regular; urine clear and free; eructations after taking the medicine.

CASE III.—Phthisis pulmonalis; Carrie W., æt. 25; May 5, 1887; her father died of heart-disease at the age of 28.

Previous History.—Says she had pneumonia five years ago; did not have a doctor, but was examined at a dispensary; had never had any cough before that time. Once in a while after that she would expectorate blood-stained sputa. Used to have a cough almost all the time, but generally most in March. She has had four children; three died in infancy.

Present History.—She had a severe hemorrhage on March 2; cough was severe and expectoration difficult, with bloody sputa; "had pain in chest and around heart;" had fever, but no chills; heavy sweats, diarrhoea, and vomiting. She coughs most in the morning and at night when lying down; cannot rest well on the left side; is short of breath on exertion and in the morning; sputa thick and yellow; pain in right side; no night-sweats or fever; feels exhausted; has lost in flesh; appetite poor; bowels regular; menses irregular and scanty. R Terebene, ℞ xv q. d. in mixture.

Physical Examination.—On percussion, dullness under right clavicle. On auscultation, bronchial breathing and bronchophony under right clavicle; harsh respiration over both lungs in front, most marked under left clavicle; feeble respiration at both apices behind; harsh below; coarse râles at right base behind.

May 7.—Cough is easier; sputa are thin and watery; breathing is easier, and she can sleep much better; little pain in right side; bowels regular; urine about the same.

CASE IV.—Phthisis pulmonalis; Elizabeth K., æt. 36; May 12, 1887. Her family history is good. Last May she had a cold, and the doctor told her she had trouble in the lung; had cough and fever; no pain in chest; no hæmoptysis; had laryngitis, which began in November, 1886; night-sweats; emaciated; now she has some cough, with yellow expectoration; sometimes has night-sweats; has lost in flesh; appetite fair; sometimes has pain in left lung; yesterday for first time had hæmoptysis; lost quite a good deal of blood. R Terebene, ℞ xv q. i. d. in mixture. She was also given the compound syrup of the hypophosphites and cod-liver oil.

Physical Examination shows consolidation at the left apex and a good deal of pleuritic exudation in the left side; some fluid in left pleural cavity.

May 21.—Less dyspnœa; cough less; sputa diminished and yellow; urine same; sputa bacillated.

June 2.—Dyspnœa and cough less, and sputa diminished in quantity. She coughs, however, at night about as much as formerly.

Terebene is not disagreeable to take, and I have not found any difficulty in having my patients continue it for several weeks or even months.

Only after a considerable time and its use by a number of observers should a drug be received as a useful member of the Pharma-

copœia. Terebene bids fair at present to earn its right to occupy such a place.

19 EAST THIRTY-THIRD STREET, NEW YORK.

CURIOSITIES OF THERAPEUTICS.

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(Concluded from page 669.)

V. PSYCHO-PHYSICAL EVOLUTION OF MEDICINE.

FROM the stand-point of the vulgar masses essences that "walked not in the light"—that is, were unresolved—were supposed to seek opportunities to re-enter upon mundane existence, even in inferior station or capacity, in order to work out the expiation that would permit permanent unity, or *Perfection*, with the Supreme. From this, with the Buddhistic branch of Veda-Brahmism, arose the doctrine of Transmigration,—an exoteric explanation wrested from the priesthood in the same manner as the purgatorial confession of the Romish Church was obtained from Gregory the Great.* This was a matter of state polity, and subsequently elaborated in order to perpetuate esoteric tradition, and to embrace the so-called metempsychosis of Gautama,† to which was added the conceptions of the vulgar of future places of reward and punishment as derived from esoteric references to the ordeals and initiations of the Colleges.‡ A wandering unresolved spirit of

* In the popular belief of Middle-Age Christianity, St. Peter sat as a doorkeeper at the gate of Heaven: to him it had been given to "bind or loose," consequently he denied or admitted the spirits of men in consonance with his own pleasure. This, however, was a power many (even among the priesthood) were disposed to deny, as being anticipatory of the "Judgment," which would thus be rendered nugatory or needless. Soon arose a demand similar to that now agitating one of the orthodox sects of the religious world,—a demand for a period of probation, and resting-place for departed spirits,—which was met in the latter part of the thirteenth century by Pope Gregory granting a "place of purgation,"—*Purgatory*.

† According to tradition, Buddha has appeared, or eventually will appear, upon earth twenty-two times, in some mundane form: and this metempsychosis, by vulgarism, has been extended and multiplied to one thousand, of which more than six hundred have been accomplished.

‡ It must be remembered, like all religions, Christianity was *Mystical* in its early days. Primarily *Mystery* had a different signification from that now attached to the word: it was equivalent to *Instruction*. Baptism,

evil, chancing to encounter another and weaker in possession of a mundane economy, *might* usurp the place of the latter, and thus obtain temporary relief, the latter being forced to accept the burdens of the former. As a sequel of such belief and teaching,—a teaching perfectly in consonance with the primitive condition of the uneducated mind,—the ill, insane, feeble-minded, epileptic, etc., exactly as is true among savage and Oriental races of to-day, were deemed holy,* and regarded with superstitious awe as being invested with emanations from the supernatural world. Syncope, like ecstasia and delirium, was in some measure separation of the soul from the body, or the overthrow of the material essence by contending spirits, or perhaps a temporary summoning thereof into the "Awful Presence" for purposes known to the latter alone: and by the *Koran*, and unwritten laws of barbarism, those stricken with any form of mental insensibility or rapture are not to be interfered with, lest the act tempt the displeasure of the spirits or Supreme to the

sacrament, confirmation, eucharist, "The Lord's Supper," all are acts and formulæ derived from the *Mystikos Sekos*, or Colleges of antiquity, and all, even as late as the fourth and fifth centuries, were termed *Mysterries* by Christians. So, too, the passion plays, intended for popular instruction, bore like name. (See McClintock and Strong's "Biblical, Theological, and Ecclesiastical Cyclopædia," vol. vi. p. 785.) From the scenes exhibited in celebrating the *Mysterries*, and in their initiations, were copied the anthropomorphic ideas that even yet obtain regarding heaven and hell. During the ordeals a candidate yielding, was suddenly plunged into deep and dark subterranean chambers, from which, if he issued alive, it was at the expense of his reason. An excellent and vivid description of these "dark abodes," and of the tortures of probation, occurs in an old French romance of the last century, entitled "The Life of Sethos." These chambers, in partial state of preservation, have been discovered by modern explorers: and at Uxmal, in Yucatan, in an artificial mound of peculiar construction, known as the "House of the Dwarf," such exist in their almost original perfection, their ceilings forming triangular arches, a shape adopted undoubtedly in accordance with certain Mystical teaching (esoteric), since circular arches exist elsewhere. These arches are the counterpart of those described by Enoch, the apices of which are stones engraved with mirific characters. (See THERAPEUTIC GAZETTE, August, 1887, p. 541, Appendix N.) The same arch is found in the Chaldean tombs at Mughier; in the centre of the great pyramid of Ghizeh, in Egypt; in the most ancient monuments of Greece (the treasure-room at Mikene, and in the tombs of Etruria, etc.), Persia, and Petra.

* Everywhere in the Orient the mentally afflicted are deemed *sacred*. Epileptics, like those from whom Jesus of Nazareth "cast out devils," are frequently inclined to claim for themselves holiness. See Ireland's "Blot on the Brain," p. 40.

detriment and undoing of those meddling.† Such is the origin in part of various orders of religious mendicants and devotees; and in this also we see a yielding on the part of knowledge to meet the demands of primitivism, which assigns spirits to all things, and requires an essence for the inert and inorganic as well as the vital and organic.‡ Among other esotericisms, some of which yet obtain in various guises in the midst of the highest civilization, we find various spirits permitted to serve as attendant sprites for the warning, torment, and torture of the embodied evil of earth, whereby they work out their own expiation:§ this is the original doctrine of familiars, ghosts, *lares*, *manes*, etc. But for the most part, essences, whether temporarily or permanently separated from the mortal clay, if not within the pale of Perfection, are condemned to walk in "outer darkness," tortured by inability to return or Perfect,|| until such a time as they shall have attained the purity that will enable them to encompass one or the other of the desired ends. Ultimately, however, Perfection will result, at the period of final restitution that must overtake all things, when they will be merged into that whence they were derived,—the Infinite.

The usurpation of the corporeal form was *prima facie* evidence of imperfection and inharmony on the part of the individual body and its vivifying essence,—an inharmony that by the Masters of the *Mystai* was recognized as amenable to influences developed from or through the Infinite Intelligence—biologic force—in proportion to the ability of the operator, and faith upon the part of the operated. Knowledge of this force, as had through Mystical education, was prompt, certain, and sure in its phenomena, though not perhaps in its effects; but when such power was derived from inharmony, or interrupted

† See p. 233, THERAPEUTIC GAZETTE for April, 1887; also Conjunction of *Pou-ni-ka-ma-ta* in the same for May, 1887, p. 308.

‡ Ibid., April, 1887, p. 229.

§ Says Mr. Brainerd in "Historic Incidents in India," speaking of the primitive race of *Shanars*: "Their religious ceremonials have reference to the influences disembodied spirits exert over the condition of the living. . . . These spirits are supposed not only to take up their abodes in dwellings, but also in the bodies of the living, whereby the individual consciousness and responsibility of the person possessed is supposed to be suspended." Note, too, the incident in the *New Testament* related by Luke, chap. viii. 27-30, and Mark v. 2-8; also Draper's "Conflict of Religion and Science," p. 120.

|| Matthew xii. 43-45.

through lack of familiarity with the laws governing its production and application, it was uncertain.* Familiarity with these laws could be obtained only by the long and arduous education that had for its graduation the "new birth,"—an education which even Bishop Warburton admits to have been the "nature of the phenomena concerning the secrets of the world." Hence the Nazarene, confident in his Perfected superiority as obtained through the Colleges of Egypt, familiar with the laws whereby prompt obedience is demanded of the nerve-centres, "cast out demons," healed the epileptic, relieved the palsied, and restored the afflicted to their "right minds."† That such were by no means uncommon phenomena among the *Mystai*, and deemed the reverse of miraculous save perhaps in the eyes of the vulgar, we have frequent evidences in the Old Testament and the doings of Prophets, or *Mac*, and also the testimony of Christ himself as reported in the "*Gospels*":‡

* Matthew vii. 13-24.

† Ibid., xii. 24-28.

‡ In quoting the above I have availed myself of the Greek, which, as will be seen, compares favorably with the New Version by employing the optional (marginal) notes. That the mind can make contact with other minds, and with objects we are pleased to term inanimate and inorganic, through *other* channels than the five senses, is now becoming slowly recognized. It must be remembered that of the many thousands of years of man's residence upon this earth, but a very brief period of existence, so far as our knowledge and history extends, can be claimed for inductive science; and it is somewhat absurd, though in perfect consonance with human egoism, to claim the mystery of the universe has been probed to the bottom. Professor Crookes truly remarks, "We live in a world of marvels, of which not one-millionth part has ever been guessed, much less discovered, roughly giving the title of supernatural to everything beyond our comprehension." Why mental impression—call it biologic force, or whatever you will—may be manifested at considerable distances, as yet is a problem beyond the capabilities of the human mind; but these very manifestations give evidence not only of being the reverse of the miraculous or supernatural, but of being controlled by fixed laws. Having not even mastered the alphabet of these laws, we are accustomed to judge by visual *effects* without knowledge of *cause*. That cause may have its origin in the subtle fluid man has harnessed to the electrical machine, and that is developed by the decomposition of chemical agents, is surmised. Is Life merely a factor of such decomposition obtaining generally throughout the universe? Is corporeal existence a storage-battery, so to speak, or one of many cell-factors? It cannot be denied that, under certain conditions and surroundings, individuals and animals can and do develop a force superior and entirely unlike to their muscular abilities, and that this force may be

"And if by Beelzebub I cast out demons, *by whom do your sons cast them out?*"—sons in this instance referring to the Jewish *Mystai*, for he was speaking to the Pharisees, who were all men of the Mysteries, and who sought to array the rabble against him by the assertion his power was illegitimately obtained through a mythically esoteric personage. "Therefore shall *they* (the Hebrew Colleges) be your judges. But if I in the Spirit of God cast out demons, then is the kingdom of God come among you. How can one enter the dwelling of *the strong* (of power) except he first find the *strong*? . . . Every sin and blasphemy shall be forgiven *you* men: but the blasphemy of the Spirit shall not be forgiven . . . neither in this age, nor that which is to come. Either make the tree good, and the fruit is good; or make the tree corrupt, and its fruit is corrupt: for the tree is known by its fruit. Ye offspring of

called into play through nervous inharmony and mental effort. Whence this power is derived, and where it may—or rather where it may *not*—be found, is beyond surmise, since it often, and suddenly, manifests itself in most unexpected situations. Those who have observed so-called mesmeritic and hypnotic phenomena, know that these are not obtained save at the expense of the nervous system and a waste of gray nerve-substance. May not the *Perfection* of the Mysteries, then, have been in part the means of restoring to the human battery—the nervous system—the waste expended, just as the *electrical ray* or *eel* recovers its power? If the evidence of such candid observers as Messrs. Hare, Crookes, Hallet, Stewart, Wallace, etc., may be received,—gentlemen who have no end to accomplish but scientific truth, and no interest or belief in modern Spiritualism as popularly enunciated and taught,—the removal of the bonds to a distance, as narrated in the conjurings of *Wa-ah-poos* (THERAPEUTIC GAZETTE, May, 1887, p. 311, Supplement G), is within the range of possibility, independent of trickery, though in this instance the latter was undoubtedly resorted to. It involves no phenomena that we may not see manifested in the broad glare of day by the moving of heavy articles of furniture at a distance from the operator. I have personally known a gate to be opened by lifting the latch, again closed, opened again and swung in the opposite direction, and this repeated half a dozen times in succession, the individual procuring this phenomenon meantime seated four rods away; and though muscularly the superior of the operator, my strength was insufficient to control this movement. This undesired power was a great source of annoyance to the individual in question, whose stanch orthodoxy abhorred such involuntary "coquetting with the agents of evil." He could not explain it; it came and went abruptly, and without warning, merely manifesting its return by a "peculiar tense feeling about the head," as he expressed it; and the worry resultant therefrom eventually brought him within the four walls of an insane retreat. (See THERAPEUTIC GAZETTE, May, 1887, p. 310, Appendix E.)

Vipers,* how can ye, being evil (not yet Perfected), speak good things (the truth)? For out of the abundance of the heart (knowledge) the mouth speaketh."†

Observe in the foregoing, as also in the paragraph following, a beautiful example of esoteric language, conveying reproof as well as indignation; and that the speaker not only makes his claim good to rank as an exponent of the Higher Mysteries, but wrings an acknowledgment of the fact in part from his accusers, is shown in that a moment later they concede and address him by the title of *Master*, which only accrued to those who had obtained the first of the three final degrees leading to *Perfection*! There is nothing strange that this man of foreign education should incite the enmity and opposition of the *Lab-Mac* (Chief Priests) of Jerusalem, since he was a living reproach upon their Mysteries, which had become prostituted to the most base of purposes. Listen to what he says under examination and trial for his life: "*To this end have I been born, and to this end came I into the world,—that I should bear witness of the Truth.*" Every one that is of the *Truth* heareth my voice,"—i.e., understood the meaning this esotericism was intended to convey. "Pilate saith unto him, 'What is Truth?'"‡

The Supreme being an *Æther* permeant and permeable of space, and Life and Matter alike, emanations or rather proliferations of that Ether, it was but natural the *Mystai* should hold that change in one portion of the Fluid could not take place without influencing in greater or less degree the other two, in accordance with the law of dispersion of fluids. This was the primary physiology of the ills of animality we are accustomed to denominate *Disease*, a term that etymologically expresses disturbance or inharmony; or, in other words, disease is a sequel of impression whereby are disturbed the relations existing between the corporeal and essential, or between both and the Universal Intellect. Thus the movements of planets, such as their

cycles, conjunctions, apogees, and perigees, could not be without influence upon the earth, and through it its inhabitants, in proportion to its distance therefrom,—exactly as the concentric wave-circles made by the pebble dropped into the pool disturb the equilibrium of the leaves strewn upon the surface, in proportion to the intervals,—just as the steamer ploughing through the lake washes with waves the distant beach in consonance with the law of equalization, which causes the waters to rush to supply the vacancies made by the obstructing and moving hull. Here we see another evidence of *recorded impression*. Here was the foundation of astrology, astronomy, and mathematics; and from like source was derived all scientific nomenclature,—therapeutical, nosographical, etc., besides providing titles for the various productions of earth, including the metallic bases defined by a science that itself received its baptism from the land of *Chemi* and Colleges of the Delta.§ It was discovered that the seasons depended upon solar influence,—the solstices; that other planetary movements coincided with certain arrangements of waters, growth of plants, and kindred physiographical phenomena; that the rise, fastigium, and decline of epidemics, plagues, storms, drouths, etc., etc., corresponded to certain celestial phenomena; that all things exhibited a tendency to move in cycles, even to pestilences and the artificial emanations of the human mind. Planets derived their names from those of the *Mystai* who devoted their days to the solving of problems connected with or propounded by such celestial bodies. An imperfect and empirical form of knowledge accrued to the priesthood through esotericism, whence was derived divination,|| sor-

§ Words in general employment in our own day are survivals, such as "sunstroke," "moon blindness," lunacy, saturnine, mercurial, venery, venereal, aphrodisia, urea, adonis, May, etc. Indeed, it is almost impossible to utter a sentence without some word that philologically owes its origin to the Mysteries.

|| Divination was the study of *impression* upon animals and other objects of nature, whence arose *sacrifice*, and whereby men were led to anticipate changes in the Universe by the most subtle of such impressions. It was the foundation of pathology and modern physiology. We to-day smile at the "goose-bone" and "chicken offal" predictions of old women, weather-wise men, and their ilk, and justly so, because they are mere lingering superstitions. We term them *coincidences*, but as nothing is without law, there must be a law for coincidence, which, in our era at least, escapes the human understanding. We admit, however, that animals receive impressions that are forerunners of great cataclysms or convulsions, like earthquakes, tornadoes,

* "*Vipers*," or serpents in this instance has not reference to the creature: it was a Mystical term for the lower degree of *Mystai*. It will be remembered the serpent was a symbol of Nature and of the Universe.

† Note how the Pharisees, convinced in their own minds of the authenticity of Jesus' claims, yet endeavor to weaken his influence, first by demanding a sign, then by calling attention to his supposed ignoble origin: "Behold thy mother and brethren stand without." To which he substantially replies that all seekers after *Truth* and followers of *Pathr* are brethren.—Matthew xii. 22-50.

‡ John xviii. 38.

cery, and the astrology of our history which (manifestly) is but a shadow of the real. The secrets of the *Mac* were so sacred but few, even of the sacerdotal orders, were admitted thereto,*—only those deserving of the honor; they put in practice the principle "It is necessary to keep the discoveries of the philosophers in the works of art or nature from those unworthy of knowing them," as enunciated by Roger Bacon, who was confined during many years in a prison cell by his ignorant brethren because of his erudition. The *Mac*, however, possessed of the Truth, were alike revered for their knowledge and feared for their power, and with the vulgar, as a sequel to exoteric explanations offered by the lesser priesthood, obtained a supernatural halo by reason of their supposed connection and familiarity with the Supreme. Naturally in time they came to be revered as deities; and thus arose the apotheosis, that, coming to us from vulgar sources, has been mistakenly accepted as the religion of all classes, ranks, and conditions alike. The apotheotized *Mac*, "the gods," by rea-

etc., which for lack of better reason we term *Instinct*, but which undoubtedly is due to interrupted harmony. The *Mystai* professedly understood these things, and the means whereby such evidences were recorded.

* Clement of Alexandria writes: "The Egyptians neither intrusted their Mysteries to every one, nor degraded the secrets of Divine matters by disclosing them to the profane, reserving them for the heir-apparent to the throne, and for such of the priests as excelled in virtue and wisdom." Again, if we go to Hindustan, there we will learn of a secret society of wise and learned men, whose object is the study of philosophy in all its branches, but particularly the spiritual development of man. The leading fraternity is established in Thibet; and the high pontiff and other dignitaries of the Lamaistic faith belong to it. They are known throughout India by the name of *Mahatmas*, or "Brothers." To obtain this title it is necessary to suffer a long and weary probation, and pass through ordeals of terrible severity. Many of the *Chelas*, as the aspirants are called, have spent twenty, even thirty years of blameless and arduous devotion to their task, and still are in their earlier degrees, looking forward to the happy day when they may be judged worthy to have the title of Brother conferred upon them. These *Mahatmas* are the successors of those secret societies of learned Brahmins, so celebrated for their wisdom, from very remote ages, even in India, and of whose Colleges, always built on the summit of high mounds, either natural or artificial, Alexander the Great, when he achieved the conquest of that country, was never able to take possession. Philostratus informs us that their mode of defence consisted in surrounding themselves with clouds, by means of which they could at will render themselves visible or not, and hurling from their midst tempests, fire, and thunder on their enemies. Evidently in those early times they were familiar with gunpowder or explosives of kindred nature, and made use of these to explode mines and destroy their assailants.

son of their studies of certain planets which subsequently bore their names or titles, became confounded with these bodies, and as investigators they were supposed to be familiar with all the phenomena accruing to the changes and movements in the heavens. In this way thirty-six diseases with their titles (some of the latter now obsolete) have been directly handed down to us, that philologically or otherwise are of celestial or planetary extraction (and indirectly and by combination twice as many more); and an equal number of pagan gods are found associated therewith, that to-day, rebaptized as *saints* into the Romish Church, perform for the vulgar the same offices as of yore.† It is not becoming in us to sneer at these facts, however, since our own history and tradition is for the most part made up of esotericisms and exoteric explanations thereof; and we perpetuate the same in our daily‡ relations, being driven thereto to satisfy the queries of ignorance, infancy, and childhood; and every religious body in its confession of faith, its creed, or its catechism, deals in esotericisms,§ which as explained to the vulgar, inculcate doctrines oftentimes, that are wholly at variance with those of its founders or more educated followers. It is impossible for any two minds to see or reason precisely alike, and a trifle of divergence here, as in mathematics, by prolongation may eventually secure an impassable gulf of separation. In the Latin Church we find an educated priesthood controlled by a high pontiff, but the vulgar herd that constitute the bulk of its following receive such exoteric explanations of the doc-

† "The vulgar believed there were thirty-six demons or spirits who bore the names of the planets, and who were instrumental in procuring disease." (Origen.) The Latin Church has a like number of saints, with like properties and abilities. (See McClintock's "Cyclopædia.")

‡ Almost invariably the logical mind of the child, when instructed that "God made the world" and is a general conservator, inquires, "Who made God?" when the parents are forced to take refuge in esotericisms that are esoteric even to themselves.

§ "Jesus Christ is *God*, being the Logos. Jesus Christ is *man*, possessing the normal characteristics of humanity. Jesus Christ is *God-man*, being the union of God and man in one person. Therefore Jesus Christ is the product of an incarnation; that is, according to the plan of the Father and by the agency of the Holy Ghost, the Logos took a physical body in a virgin mother." (Dr. Townsend's "Outline of Christian Theology.") It may be seen how Perfection was deemed the union of the Supreme and man in the same person, and that the Perfected, like Christ, were elevated to the rank of Divinities.

trines of the faith as are found to be best adapted to their comprehension. Truly it is folly to "Cast pearls before swine, lest haply they trample them under their feet." Yet, social polity demands the linking of humanity by bonds, in order to insure its preservation and to secure general unity of purpose. Marriage, for instance, has as its ultimate object the perpetuation of the human race; but so far as the sequel is concerned the form of the administered rite is immaterial, and but an esotericism and mystical survival. But look behind the veil into the mysterious laws of heredity, and here will be found paramount physiological reasons for the binding of the two sexes by law,—the same reasons that originally led to the high estimate placed upon virginity and female continence,—a reason that would suppress the hostile heritage of imperfection as a sequel to physically-perfected conjunction.* Superstition has made a psychical and physiological necessity of a form that, originally a true sacrament, has now lost its original significance; but its value to the world at large is none the less manifest in spite of repeated violations and lack of higher understanding.

I have endeavored in a cursory manner to show that the Mysteries, wherever found, were established for the cultivation of science, the acquirement of knowledge, the improvement of man's moral and physical nature, the development of his intellectual and mental faculties, and a general understanding and study of the laws that govern the Universe,—all of which are immediately linked with Therapeutics. The *Mystai* made of their learning and discoveries a profound secret, surrounding with mysterious and enigmatical allegories and symbols, because, says Strabo, "To surround the things that are sacred with a mysterious obscurity is to make divinity venerable,—is to imitate its nature that escapes man's senses;" or, as Gregory of Nazianze wrote to Jerome, "The *less* ignorant men understand, the *more* they admire." And so the intermediates between knowledge and vulgarity, the priests, desired to be regarded as mediators between the Perfected and man, as were the Perfected between the priesthood and the Supreme Intelligence.

The similarity of rites practised, the identity of symbols, prove that all had their origin from a common source,—a source that is a mat-

ter chiefly of conjecture. The Brahmins claim to have taught the Egyptians and Chaldeans, and it is well known that in many of their religious ceremonies they employ words that are older than the Sanskrit, and that are said to be derived from a language known as *Akkadian*, originally spoken by the peoples of the countries contiguous to the lower Euphrates.† "This," says Dr. Le Plongeon,‡ "strange as it may appear, presents many affinities with the Maya dialect, which is still the vernacular of the aborigines of Yucatan and other countries south of the Peninsula." Valmiki, in the *Ramāyana*, tells us colonists from Mayax in very remote ages settled in the Orient; it is well known there were Magi in Babylon at the time of Daniel, people possessed of special learning, speaking a strange tongue, and deeply versed in the art of prophesying, explaining dreams and prodigies, and the omens derived from the entrails of victims offered as sacrifices; and elsewhere it has been shown that *Ma-gi* and *Ma-yi* are cognate, if not identical words.§ We also know the apartment in the temples sacred to the higher initiations, whether in Mayax, India, Egypt, Arabia, Chaldea, or Judea, had the form of a rectangle,|| the form preserved for temples of worship to this day. A rectangle in the hieratic alphabet of Egypt and Mayax—and so in the ancient Chinese—is the letter M, pronounced *Ma*, a word that means not only *first*, but *place*, *country*, and by extension the *Universe*.¶ The *Mystai* adopted it, not, as has been suggested, because they believed the earth to be square or oblong, for they well understood its sphericity, but as the sign of the word *Ma*, which conveyed to their minds the precise idea that is expressed by our word *Earth*.

Undoubtedly Osiris, Horus, Isis, Apollo, Saturn, Vulcan, Mercury, Mars, and the host of other pagan deities appearing in different countries under different names, were originally real personages admitted to the Higher Mysteries, the same as Menu, Hercules, Chiron, Esculapius, etc. The history whence we derive our information is esoteric by the confessions of its authors. Allegory was the language of the Mysteries, of the books, of the

† THERAPEUTIC GAZETTE, August, 1887, p. 541: latter part of Appendix N; also foot-note on page 534.

‡ Sacred Mysteries of Mayax, p. 33.

§ THERAPEUTIC GAZETTE, August, 1887, p. 530.

|| Exodus xvii. 18.

¶ Modern Masonry derives its word *lodge* from the Sanskrit *logia*, "Universe." This is why the lodges of M. possess their present form.

* It is a physiological fact that the first (voluntary, at least) sexual congress leaves the impress of the male upon all subsequent offspring of the female.

priesthood, of the founder of Christianity; it was employed by the Prophets and the Oracles; it is the language of the Orient to this hour, and is markedly assertive in the speech of all barbarians and primitives. It is a form of poesy, and poetic license, permissible in all ages, made more obscure by philological changes accruing to Time. There is nothing strange in the fact that the lines of Homer as handed down to us lack the fire and deep meaning of the period at which they were composed. Even older are the Psalms of David, and other Hebrew poets. The Vedic hymns are yet all but sealed books to the ablest scholars. The poems of Ossian, and Norse *sagas* recording historical incidents, are so interwoven with allegory as to meet little sympathy or favor save from a few, so little that they are often stamped as fables! Think, then, upon the difficulty of obtaining the true meaning of ancient words, doubly handicapped by esotericism and the subtleties of languages that are now obsolete; and remember also the dialect of the Canadian *Habitan*, which represents the Galic speech of only two centuries ago, is practically unrecognizable by the modern Parisian.

Science in every age and era demands support, hence in all times tithes and offerings have been required as a tribute from ignorance to knowledge; hence the system of sacrifices whereby the vulgar were accustomed to reward the erudite for instruction received,—instruction that was rendered in proportion to their capacity to receive and comprehend. If that instruction was esoteric, or exoterically rendered esotericism, it at least had the merit of corresponding to the law of demand and supply, exactly as the modern clergyman is retained or dismissed from his pulpit accordingly as his labors meet the pleasure of his parishioners. From tithes and offerings the transition to amulets, especially among the more vulgar, was simple; and even amulets are not without value from a psychophysiological stand-point, oftentimes. So, too, the therapy of the modern medical man is often, more often than is commonly surmised even by the prescriber, psychical and consequently amuletical, and that, too, in spite of supposed direct application and action. But is therapy to be abandoned because it is a source of frequent error? Who has not discovered that the same drug, in like doses, in palatable form was practically inert with certain individuals, but speedily asserted itself when administered in all its crude nauseousness? In all the masses of error there must

still be an element of truth hidden, else the error could not exist. Causes give rise to effects, yet a combination of effects may also tend to modify the cause. Physiologically and inherently we are all superstitious and affected by superstitions, only in varying degrees. We all seek to fathom the secrets of nature, yet stand in awe thereof. "Too great familiarity breeds contempt," hence from a sociological view it is well we cannot all grasp the same idea alike, and that the one great secret of life, term it perfection, future unity, or what you will, is in some measure esoteric.

Unfortunately, as we delve among the musty and forgotten records of the Past, our mental vision is dimmed and warped by association with the present, sometimes even obliterated. We see merely that our civilization is a survival and a reculture of the forgotten. The little that comes to us of the realities of the Mysteries is far from being clear, since it is impossible to separate it from modern superstition. Medicine, in some of its branches at least, has been equally if not further advanced than in our own decade. Turning to the "Flowery Kingdom," a country whose literature and history have been so little explored as to be practically unknown, we discover among the occasional liftings of the veil of obscurity the fragments of intellectual monuments of stupendous grandeur, no way behind those of Mayax, India, and Egypt.

There are abundant reasons for surmising the Celestials were anciently possessed of greater knowledge of physical, mental, and medical sciences, including pathology, than at any period of their history familiar to our civilization. Thirty-one centuries before the Christian era the emperor Chen-nong was the author of an extensive treatise that embraced Therapeutics, Materia Medica, Pharmacy, Anatomy, Physiology, Histology, and Biology. In this work remedies were classified according to their action and properties, and in accordance with a primary division into pyretics, antipyretics, and febrile neutrals. The same distinguished author is also said to have discovered the counterpoise of the earth, which by some is supposed to have reference to the action of gravity.* Four centuries later, in the reign of Hoangti, sometimes denominated the "Yellow Emperor," the phenomenon of the circulation of the blood attracted the attention of the learned, becoming a subject of exhaustive investigation

* Probably this is esoteric, and refers to certain doctrines of the Mysteries.

and experiment, carried on in part by the aid of condemned criminals, and partly by researches in comparative physiology. The results are to be found in the surviving remnants of the *Soo-Wan*, or "Disquisitions upon Health and Disease." The John Hunters of this era appear to have been the emperor himself,* and three members of the Imperial household, designated as Ky-pe, Yen-fou, and Ley-king, and it is affirmed that science was in such an advanced stage of perfection that "the remedy requisite to the relief of every ill and condition of humanity was known, and men lived out their allotted days in consonance with the intent of Nature."

From 2207 to 248 B.C., a period embracing the *Hya*, *Shang*, and *Chen* dynasties, a vast number of medical works were published, some of which, or fragments thereof, are still extant, and religiously preserved among the archives of the Chinese Empire. One of these fragments, known as *Nan-king*, and accredited to the eleventh century, B.C., is frequently cited as being a most complete compend of the opinions, practice, and prescriptions of the most eminent authors of this and preceding ages, the information embodied being further enhanced by succinct and definitely arranged psychological, physiological, and pathological annotations. Voluminous publications devoted to Therapy and Jurisprudence also characterized this period, and in certain departments of medical law, the Celestial physicians, as they do to-day, enjoyed an exalted reputation. "Among other instances of superiority in this respect," remarks Surgeon Gordon,† "to which, with or without reason, they pretend, is the method by which they affect to discover whether a man found dead by strangulation had been his own executioner, or been strangled by others; whether, in the case of a body being found in the water, death preceded, or followed, the immersion; and whether in other cases death had been the result of natural causes, or felonious violence."

According to generally conceived and accepted opinion, smallpox first made its appearance in the Orient somewhere about A.D. 317-420, but a comparatively recently discovered work entitled *Tao-u-tchin-fu*, a copy of which is in possession of the British Museum, speaks of it definitely and specifically, as known to the Chinese at least twelve cen-

turies prior to the Christian era; and presumably it is of much greater antiquity, but confused with other epidemics because of the term translated *plague* or *leprosy*, which was indiscriminately applied to all infectious and contagious maladies. Inoculation was a common practice in the earlier years of the *Chow* dynasty, somewhere about 1122 B.C. Yet the Celestials, then and now, placed less confidence therein than do Caucasians in vaccination at the present day; ‡ they assert that not only is the inoculation of variola virus oftentimes a failure so far as procuring immunity to subsequent attacks of the malady, but that the natural process of infection is equally untrustworthy,§—a fact that modern pathologists have been very reluctant to acknowledge.

Nearly four thousand years since, Chinese physicians definitely and correctly described Asiatic cholera, along with its pathological lesions; employing the same name as that which at present accrues to the malady in the Flowery Kingdom,—viz., *hwo-luan*. Also characteristic descriptions of intermittent and remittent fevers, the former accurately and minutely portrayed in works of at least six centuries' greater antiquity. Tuberculosis—*phthisis*—likewise was taught as an acute infectious disorder, the disease being conveyed by means of a minute "worm" found in the pulmonary exhalations of the patient. Evidently the *bacillus tuberculi* is not of modern origin. Crises in disease, and the natural tendency of the economy to relieve itself by

† Hamilton's "History of Medicine," vol. i. p. 30.

‡ Inoculation, as practised in the Orient,—the Indies, China, and the Levant,—was formerly doubtless well understood in all its pathological relations. It is now generally alluded to under the somewhat poetical expression of "cultivating Heaven's flowers," but manifestly invoked more as a *fetich* to conciliate the demon of the disorder, for other materials than variola virus are often added. The allusion, however, implies in former times the object was really "the development of a natural disease, the poison of which is latent in the system, exactly as fire is concealed in the flint" (Hamilton). If this be a true interpretation, the inference is that with the decadence of scientific knowledge the real object of the operation has been forgotten; there remains only an esotericism, and *prevention* has usurped the place of *cultivation*. Such particulars have a most important bearing upon the general system of "inoculation" for various diseases as now practised. They indicate, moreover, the importance of research in works referring to times past; and they point to similar results from the new system of "inoculation" as those which characterized the old. ("History of Medicine and Medical Opinion," by Surgeon-General Charles A. Gordon, M.D., C.B.)

* This emperor is supposed by some to have been the Esculapius of the Greeks.

† "History of Medicine and Medical Opinion."

spontaneous or critical evacuations at certain periods, were eulogized at the time of Ho-angti; and those suffering from febrile disorders were observed to exhibit marked change every seventh day.

"There are six sorts of distempers," wrote Chun-yu-y. "The first of the presumptive or haughty; the second of the covetous; the third of the poor; the fourth of those who have the *yin* and the *yang* inharmonious; the fifth those who from weakness are unable to accept remedies; the sixth those who credit impostors." And again, "Regard must be had to the age and constitution of the patient,—to his constitution, whether of plethora or inanition. It is necessary, likewise, to inquire into the various degrees of toxicity of poisonous remedies. . . . In short, we must not obstinately adhere to the letter of a rule on all occasions, but vary as circumstances may require."

Says Dr. Gordon, "Vital heat and radical moisture by the ancient Chinese medical writers constituted the two natural principles of life, of which the *blood* and the *spirits* are the vehicles. According to their physiology the body, with its *nerves, muscles, veins, and arteries*, resembled a stringed instrument, whose various parts have each its proper temperament or tone, suited to its particular conformation, situation, and uses. In the same manner as the string gives a different sound according to where it is touched, or the force employed, so, too, the *strings* of the body reveal whether they are too much *stretched* or *relaxed*. Herein we meet with the original ideas which at a date long subsequent were to assume a Western garb, and under such garb have their influence in medical science even down to our own day. For example, the idea of 'the spirits' and the blood being independent of each other, though united in life. . . . The theory of 'localization of function,' although discussed as a subject altogether new, is but shown in its proportions as compared with the corresponding theory expressed by the learned men of ancient China. Here, also, we find anticipated the doctrine of *strictum* and *laxum* to be long subsequently enunciated by 'classical' teachers, and brought down to the present day, for do we not still prescribe for 'nerves too highly strung,' and for 'systems relaxed' order 'bracing' air and tonics?"*

During the *Chow* dynasty, 1122 B.C., maladies were classified in accordance with their prevalence at particular seasons of the year :

headaches and neuralgias under *spring*; skin-affections under *summer*; fevers and agues under *autumn*; bronchial and pulmonary affections under *winter*,—a classification that in the main holds good in our own time. Great stress also was laid upon the value of the pulse as a factor in diagnosis, and in this modern Celestial physicians are remarkably clever, and they count twenty-four different styles of beats, besides various subdivisions. In the *Wang-Shua-ho*, issued about 500 B.C., occurs a special treatise entitled "The Doctrine of the Pulse," which refers to a still more ancient work devoted to the same subject, and it declares, "There are in the pulse a thousand differences, according to differences of age, sex, stature, and seasons."

In the sixth century B.C., *Chou-kwei*, a celebrated surgeon, flourished, and so skilful in his art, that he is said to have "cut open the abdomen, removed diseased viscera, and neatly sewed it up again without the patient having suffered anything." Here we have evidence of early employment of anæsthetics, which, both general and local, were known to India much earlier. An operation, surmised to have been an ovariectomy, is also referred to the second century B.C., and at the same time it is written: "If the sick man is suffering from some internal complaint, and medicines produce no satisfactory result . . . the surgeon now takes a sharp knife, and opens the abdomen, proceeding to wash the viscera with medicinal liquids, but without causing him the slightest pain.† The washing finished, he sews up the wound with *medicated* thread, puts over it a plaster, and at the end of twenty days or a month the place is healed up!"

We also read that *Hwa-to* in the third century B.C. enjoyed especial eminence on account of the wonderful cures effected by his skill, and that he met his death by decapitation for refusing to *trepan* a famous military despot. From this time medicine steadily declined in the Flowery Kingdom, and some-

† We are necessarily involved in doubt as to the character of the anæsthesia produced. Now and then the employment of *hascish* is alluded to; we know local anæsthesia has been a Chinese practice for centuries,—or it may have been hypnotism. In many instances hypnotism is specified, the manipulators and operators on several occasions being women. General Gordon notes that the juice of monk's-hood (aconite) is employed to procure local anæsthesia, also several species of fungi, and an exudation procured from frogs and other reptiles. Also that the doctrine of "blood-poisoning" meets with general favor, to the manifest advantage of nostrum venders and charlatans, who on every hand vaunt the virtues of "blood-purifiers."

where between B.C. 238 and 210, during the reign of Chi-Hoang-Ti of the vandal *Tsin* dynasty, the greater part of Chinese literature was destroyed, save works devoted to architecture and astronomy. Formerly with high claims for consideration, and notably superior to that of the Greeks, Chinese medicine has now so degenerated as to present a strange jumble of fetichism, astrology, and superstition, with here and there a few really valuable observations.

Lamaism possesses a voluminous literature, sacred, philosophical, scientific, theological, psychic, and historical, in all several hundreds of volumes classified as *Bkah-hgyur*, *Bstan-hgyur* (derived from India as supposed), and *Mani-Kambum* (of local origin). The first is made up of books of discipline, philosophy, metaphysics, doctrines, Buddhistical transmutations, incarnations, and the *Sutras*,—"collections of precious things," "liberations from pain," and "incantations." Between two and three hundred volumes are enumerated in the *Bstan-hgyur*, some few poetical and epical, some devoted to dogmas, but the greater part devoted to philology, medicine, therapeutics, physiology, psychology, and natural science. The *Mani-Kambum* contains the legends of the propagation of Buddhism, a description of the *Sukhavati*, or region of *perfected bliss*, ethics and religious ordinances, dissertations upon the mystical sentence *Kum om Padma* (Maya, *Con-exomon pan-ex*), including its "meaning, irresistible power," etc. As may be imagined, all are esoteric and mystical, and but little known outside of the sacred monasteries of Lhasa and Pekin. The three grades of priesthood also exhibit a mystical origin. The highest is *Chang-Chhub*, "the Perfected," or "True Intelligence." This may be reached only through the *Chang-Chhub-Sempali*, or "Perfected Strength of Mind,"—the analogue of the Sanskrit *Bodhisatwas* and Chinese *Pusas*. Lastly, the *Pratyeka*, or "Individual Intelligence," whose ranks are recruited from the acolytes or "Listeners,"—*Seavaka*.

In his translations of the cuneiform records of ancient Assyria, Mr. Sayce affords us some further insight into the status of Therapeutics in Nineveh and Babylon. He declares the medical profession to have been in a much more advanced state than the world has generally surmised. All the known diseases were classified, their symptoms described, the medical mixtures considered appropriate to each case being compounded and prescribed in quite the nineteenth century fashion. "Dis-

orders of bile" then, as now, had much to answer for. A prescription given in fever calls for "cypress extract, goat's milk, palm wine, barley, the flesh of the ox or bear, and the wine of the cellarer." In this we see a hot, stimulating, carminative draught not very dissimilar to what is often prescribed in like cases in our own day. Dr. Gordon remarks thereupon, "This method of treatment obtains significance if we refer to certain prescriptions in our own country (Great Britain) as recently as A.D. 1737,—namely, 'Make a decoction of the root of English or Flemish cypress bruised in white wine, and, after it is strained, drink the wine as hot as possible; 'tis an approved remedy for the colic.'"
Here is another, of a plant called *cypress Indicus*, but which is more properly *curcuma longa*,—namely, "the fruit is good to eat when it is boiled with meat (the modern *curry*). This *turmeric* is aperient, detersive, proper to relieve obstructions of the spleen," etc.* At the present time, instead of goat's milk and the flesh of the ox or bear, we substitute beef essence with stimulants, including the "wine of the cellarer."

In rules laid down for arriving at a correct diagnosis, the Assyrian physician was enjoined to "observe the sick man's countenance. If it shows a white appearance, his heart is cured; if it shows a dark appearance, his heart is still devoured by fever; if it shows a yellow appearance during the day, the patient's recovery is assured; if it shows a black appearance, he will grow worse, and will not live."†

APPENDIX.

O.

"Among the upper classes of citizens there was one . . . who . . . bore the Greek name Nicodemus, and was a ruler, a foremost man, in the religious world of Jerusalem, a member of its governing class, and in sentiment and party a Pharisee. . . . He was a man of advanced years and high position, and might, no doubt, have done good service to Christ's worldly interests among the influential classes, and have even helped toward a coalition of the priests and Pharisees with Him, had his aim been national and religio-political like theirs. There was, inevitably, a strong prejudice in Jerusalem against a movement which had begun in Galilee, and was supported by Galileans, and Nicodemus might have helped to counteract it. . . .

"As a *Rabbi*, Nicodemus was necessarily skilled in the subtle expositions of the Law for which his order was famous, and must have been familiar with the Scriptures throughout, but he had been trained to the *artificial* (i.e., esoteric) explanations of the Schools, and was *profoundly unconscious of their deeper meaning*.

* Pomet, p. 35.

† Vide Chas. A. Gordon.

Like others, he supposed that a Messiah would set up a theocracy distinguished by zealous fulfilment of the Law; every Israelite, as such, forming a member of it. Greeting Jesus as one whom he and others in his position acknowledge to be a 'Master' (one of the *Mystai*) . . . any question as to his own admission to the kingdom (Perfection) had not crossed his mind. . . . Israel as such would be saved (Perfected) . . . God had sanctified Israel to Himself forever, and made every Jew as such, on a footing. . . . Trusting implicitly in his being a Jew as a divine title to citizenship in the new theocracy, and thinking only of formal acts by which he might show his devotion and increase his claim to the favor of God, here and hereafter, he is met by an announcement that neither national descent nor the utmost exactness of Pharisaic observance, nor any good works however great, as such, availed at all to secure entrance into the kingdom. . . . Jesus broadly told him that his whole conceptions were fundamentally wrong. Every man, whatever his legal standing, must be *born again* if he would see the kingdom of God. To do so is not a question of acts, legal or moral, but of their motive. The idea of being born again should not have been incomprehensible to a Jewish *Rabbi*, for . . . '*creating a clean heart and renewing a right spirit*' are expressions that must have been familiar to him in the Law, and the Prophets, and the Psalms. But the full meaning of such terms had been lost in the prevailing externalisms (esotericisms). He took the words in their literal sense. In his perplexity he supposed that what was demanded was in some way connected with his nationality, which he assumed already opened an unquestioned entrance for him into the theocracy." (Geikie's "Life of Christ," chap. xxx.)

P.

Such an illustration shows how trivial an impression may be recorded and preserved; and if, on such an inorganic surface, an impression may thus be indelibly marked, how much more likely in the purposely constructed ganglion! A shadow never falls upon a wall without leaving thereupon a permanent trace,—a trace which might be rendered visible by resorting to proper processes.

Dr. Draper, commenting upon such fact, adds, "Photographic operations are cases in point. The portraits of our friends, or landscape views, may be hidden on the sensitive surface from the eye, but they are ready to make their appearance as soon as the proper developers are resorted to. A spectre is concealed on a silver or glassy surface until, by our necromancy, we make it come forth into the visible world. Upon the walls of our most private apartments, where we think the eye of intrusion is altogether shut out and our retirement never profaned, there exist the vestiges of all our acts, silhouettes of whatever we have done.

"If, after the eyelids have been closed for some time, as when we first awake in the morning, we suddenly and steadfastly gaze at a brightly-illuminated object and then quickly close the lids again, a phantom image is perceived in the indefinite darkness beyond us. We may satisfy ourselves that this is not a fiction, but a reality, for many details we had not time to identify in the momentary glance may be contemplated at our leisure in the phantom. We may thus make out the pattern of such an object as a lace curtain hanging in the window, or the branches of a tree beyond. By degrees the image becomes less and less distinct: in a minute or two it has

disappeared. It seems to have a tendency to float away in vacancy before us. If we attempt to follow it by moving the eyeball, it suddenly vanishes. Such a duration of the retina proves that the effect of external influences on nerve-vesicles is not necessarily transitory. In this there is a correspondence to the duration, the emergence, the extinction of impression on photographic preparations. Thus I have seen landscapes and architectural views taken in Mexico developed, as artists say, months subsequently in New York, the images coming out after the long voyage, in all their proper forms and in all their proper contrast of light and shade. The photograph had forgotten nothing: it had equally preserved the contour of the everlasting mountain and the passing smoke of the bandit fire.

"Are there then contained in the brain more permanently, as in the retina more transiently, the vestiges of impressions that have been gathered by the sensory organs? Is this the explanation of memory,—the Mind contemplating such pictures of past things and events as have been committed to her custody? In her silent galleries are there hung micrographs of the living and the dead, of scenes that we have visited, of incidents of which we have borne a part? Are these abiding impressions signal-marks, like the letters of a book, which impart ideas to the mind; or are they actual picture-images, inconceivably smaller than those made for us by artists in which, by the aid of a microscope, we can see in a space not bigger than a pin-hole a whole family group at a glance?

"The phantom images of the retina are not perceptible in the light of the day. Those that exist in the sensorium in like manner do not attract our attention so long as the sensory organs are in vigorous operation, and occupied in bringing new impressions in. But when these organs become weary or dull, or when we experience hours of great anxiety, or are in twilight reveries, or are asleep, the latent apparitions have their vividness increased by the contrast, and obtrude themselves upon the mind. For the same reason they occupy us in the delirium of fevers, and doubtless also in the solemn moments of death. During a third part of our life, in sleep, we are withdrawn from external influences: hearing and sight and the other senses are inactive, but the never-sleeping Mind, that pensive, that veiled enchantress, in her mysterious retirement, looks over the ambrotypes she has collected,—ambrotypes, for they are truly unfading impressions,—and, combining them together, as they chance to occur, constructs from them the panorama of a dream. Nature has thus implanted in the organization of every man means which impressively suggest to him the immortality of the soul and a future life. Even the benighted savage thus sees in his visions the fading form of landscapes, which are, perhaps, connected with some of his most pleasant recollections; and what other conclusion can we possibly extract from those unreal pictures than that they are the foreshadowings of another land beyond that in which his lot is cast? At intervals he is visited in his dreams by the resemblances of those whom he has loved or hated while they were alive; and these manifestations are to him incontrovertible proofs of the existence and immortality of the soul. In our most refined social conditions we are never able to shake off the impressions of these occurrences, and are perpetually drawing from them the same conclusions our uncivilized ancestors did. Our more elevated condition of life in no respect relieves us from the inevitable operation of our own organiza-

tion, any more than it relieves us from infirmities and disease. In these respects, all over the globe, men are on an equality! Savage or civilized, we carry within us a mechanism which presents us with mementos of the most solemn facts with which we can be concerned. It wants only a moment of repose or sickness, when the influence of external things is diminished, to come into full play, and these are precisely the moments when we are best prepared for the truths it is going to suggest. That mechanism is no respecter of persons. It neither permits the haughtiest to be free from the monitions, nor leaves the humblest without the consolation of the knowledge of another life. Open to no opportunities of being tampered with by the designing or interested, requiring no extraneous human agency for its effect, but always present with every man wherever he may go, it marvellously extracts from vestiges of the impressions of the past, overwhelming proofs of the realities of the future, and, gathering its power from what would seem to be the most unlikely source, it insensibly leads us, no matter who or where we may be, to a profound belief in the immortal and imperishable, from phantoms which have scarcely made their appearance before they are ready to vanish away." (Abstract of views presented by Dr. Draper in his work on "Human Physiology," and in the chapters devoted to "Inverse Vision or Cerebral Sight.")

"The only path to scientific human psychology," the author further remarks, "is through comparative psychology." It is a long and wearisome path, but it leads to Truth. Is there, then, a vast spiritual existence pervading the universe, even as there is a vast existence of matter pervading it,—a spirit which, as Kant tells us, sleeps in the stone, dreams in the animal, awakens in man? Does the soul arise from the one as the body arises from the other? Do they in like manner return, each to the source from which it has come? If so, we can interpret human existence, and our ideas may still be in unison with scientific truth, and in accord with our conception of the stability of the unchangeability of the Universe. (See "Conflict of Science." p. 138.)

Q.

EVIL SPIRITS.—In connection with the doctrine of Evil Spirits, let me call attention to an article appearing in the *Galaxy* of January, 1885. Here is given the character of Mr. Home, widely known as the "Great Apostle of Modern Spiritism," but he confesses himself a firm believer in Christianity.

"Mr. Home declares that belief in spiritualism is by no means a religious belief, and has nothing to do with man's religious faith. . . . He says they (the spirits) are not allowed to teach us . . . because we would depend too much on them. . . . An old gentleman . . . asked, 'Mr. Home, do you believe that Jesus Christ died for sinners, and that by faith in him alone we are to be saved?' 'I do, sir!' he answered. . . . 'Well, I've heard a great many spiritualists talk, but I never yet saw one that acknowledged . . . the Saviour.' . . . 'Then look at me,' emphatically answered Mr. Home. He does not pretend to explain this power of mediumship; it is like the gift of a fine voice or a talent for painting. . . . The science of spiritual manifestation is subject to certain natural laws as yet not understood. Much depends upon the atmosphere. . . . Mr. Home charges those who would investigate the subject to exercise the greatest care in the choice of a medium. He says every human being attracts to him or herself

. . . sympathetic companions; that we are invisibly surrounded by those who are like ourselves, and mediums therefore are under the influence of those who are drawn to them by likeness of character. In this way he accounts for the much injury done spiritualism through the communications of lying spirits, and the immoral social influence of many mediums."

It is needless to remark, perhaps, that Mr. Home is wholly unfamiliar with the doctrines of the Mysteries.

EXPERIMENTAL SCIENCE.—For more complete information regarding the researches of Messrs. Crookes, Wallace, Hallet, and others, I refer my readers to the Transactions of the (English) *Society for Psychical Research*.

MYSTICAL ORIGIN OF JUDAISM.—In the xxiv. chapter of Exodus, the 9th, 10th, and 11th verses compose a paragraph which reads as follows:

"Then went up Moses, and Aaron, Nadab, and Abihu, and seventy of the elders of Israel: and they saw the God of Israel: and there was under his feet as it were a paved work of sapphire stone, and as it were the body of heaven in clearness. And upon the nobles of the children of Israel he laid not his hand: also they served God, and did eat and drink."

See also Isaiah vi. 1-5; 1 Timothy vi. 16; Exodus xxiv. 17; Ezekiel i. 26-28; do. x. 1-22; Revelation iv. 2-6; Deuteronomy iv. 33; and compare these with the extracts from the Book of Enoch (THERAPEUTIC GAZETTE, August, 1887, p. 541. Appendix N), the Popal-Vuh, Books of Daniel, etc.; and likewise with the statement of Proclus, the philosopher and disciple of Plato: "In all initiations and mysteries the gods exhibit themselves under many forms, and appear in a variety of shapes. Sometimes their unfigured light is held forth to view; sometimes this light appears under a human form, and sometimes it assumes a different shape."

We are told regarding the Mysteries of Eleusis that to those who *failed* in the ordeals by which was reached the second degree, that of *Ephori*, were administered powerful narcotic drugs that "plunged them into a death-like sleep, from which they emerged with confused recollections, if not in entire forgetfulness of the terrible scenes they had witnessed, and which they believed to be produced by some frightful dream or dreadful nightmare." Again, that all the human mind can imagine that would excite the passions, were placed within the grasp of the candidate for *Epopsteia* (the highest degree). Nothing that could possibly entice from a state of moral and physical purity was omitted. But if in a moment of weakness they allowed their senses to obtain the mastery over reason, their bright surroundings suddenly disappeared, and they were plunged into the most dense obscurity; they were precipitated into a deep abyss, from which if they escaped with life it was at the expense of reason.

PORT HURON, MICHIGAN.

ANTIPYRETIC PILLS.

BY B. FRANK HUMPHREYS, M.D., HAWKINS, TEXAS.

THE occasional untoward effects of antifebrin, antipyryn, and the whole catalogue of "anti-quinine" rivals, and the alleged pathological changes which have been ob-

served to follow their administration, have made many practitioners more cautious in the use of these new remedies, and more inclined to fall back upon the old and less dangerous methods. The following formulæ have been devised and used with satisfactory results by the writer before the more recent antipyretics came into general use. If some of the manufacturing pharmacists will include them in their formula lists, they will doubtless find ready sale for them, as few physicians or druggists are in a position to prepare them properly. Distant patrons, who are familiar with their use, send to me for my "fever pills," and manage most of their malarial sickness with success. No. 1 is especially adapted to general family use, meeting the indications in ordinary cases of malarial fever.

The other numbers, as a general rule, should be preceded by, or alternated with, calomel. The two- or three-grain sugar-coated pill, to the amount of six or ten grains, followed by a saline laxative, is the most efficient hepatic remedy.

These antipyretic pills, as the term indicates, are designed to reduce the fever, and may be given in any stage of the pyrexia. They act not only as an antipyretic, but at the same time prove to be our most reliable antiperiodic. The fever usually subsides, if of the periodic type, by the time the patient becomes thoroughly cinchonized, diaphoresis being established after a few doses, followed by a gradual decline of the temperature.

NO. 1.

R Quinine, gr. ii;
Calomel, gr. i;
Antim. et pot. tart., gr. $\frac{1}{2}$;
Morphine sulph., gr. $\frac{1}{4}$. M.

Fiat P. 1.

Sig.—One or two pills every two hours until the fever subsides, or until ten pills have been administered. Usually one pill every two hours is sufficient. In urgent cases one or two pills every hour may be required.

NO. 2.

R Quinine, gr. ii;
Ipecac, pv., gr. $\frac{1}{4}$;
Camphor, pv., gr. $\frac{1}{4}$;
Gelsemine, gr. $\frac{1}{4}$. M.

Fiat P. 1.

Dose same as the preceding formula.

NO. 3.

R Quinine, gr. ii;
Ipecac, pv., gr. $\frac{1}{4}$;
Camphor, pv., gr. $\frac{1}{4}$;
Pilocarpine, gr. $\frac{1}{4}$. M.

Fiat P. 1.

Dose same as first formula.

NO. 4.

R Quinine, gr. ii;
Opium, pv., gr. $\frac{1}{4}$;
Ipecac, pv., gr. $\frac{1}{4}$;
Ext. aconite, gr. $\frac{1}{4}$. M.
Ft. P. 1.

Dose same as first formula. The drugs should be strictly pure and accurately divided.

These pills are not designed to take the place of a physician's prescription, nor are they intended to be used throughout an attack of fever when other and special treatment is obtainable. They may be conveniently used at the onset of a malarial fever, or at any time during its progress, to establish diaphoresis and hasten the apyrexia, after which the treatment indicated may be prescribed.

ANDROMEDOTOXIN.

DE ZAAVER has prepared considerable quantities of andromedotoxin from *Rhododendron ponticum*, and gives its properties as follows (*Chem. Zeit.*): It is in white, delicate, crystalline needles, melts at 228° or 229° C., soluble in alcohol, amyl alcohol, chloroform, ether, and benzol, and less soluble in hot than in cold water. The solutions in water, alcohol, and amyl alcohol are lævogyre, while a solution in chloroform is dextrogyre. It yields alkaline solutions, is not precipitated by the alkaloidal reagents, nor by solutions of metallic salts; it does not reduce Fehling's solution. When heated with dilute sulphuric, hydrochloric, or phosphoric acid it assumes a beautiful rose color, the shade varying somewhat with the acid used. $C_{27}H_{51}O_{10}$ is the formula assigned to it.—*Druggists Circular and Chemical Gazette*, October, 1887.

CRYPTOCARYA AUSTRALIS.

The physiological action of *Cryptocarya australis* has lately been investigated by Dr. Bancroft, of Brisbane. This small tree belongs to the natural order of Laurineæ, and is plentiful about Brisbane. The bark has a persistently bitter taste, due to the presence of an alkaloid which crystallizes from its solution in stellate masses of acicular crystals. When administered to warm-blooded animals the alkaloid produced difficulty of respiration, ending in asphyxial difficulty and death. It also had a poisonous action on cold-blooded animals belonging to the reptilia.—*Pharmaceutical Journal and Transactions*, October 1, 1887.

The Therapeutic Gazette

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Medical Publisher, Box 470,
DETROIT, MICH.

Philadelphia, 714 Filbert Street.

SUBSCRIPTION RATES FOR 1887.

(Journal increased to 72 pages.)

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Price to Foreign Subscribers direct (postage included) \$2.50 (10 shillings). English postage stamps received on remittances.

Editorial communications should be addressed 1925 Chestnut Street, Philadelphia. Business communications should be addressed to the publisher.

Leading Articles.

MALARIAL ORGANISMS.

AT a meeting of the Pathological Society of Philadelphia, held October 27, Dr. Councilman, of the Johns Hopkins University, read a very interesting account of researches made during the present season upon malarial blood. He found in greater or less abundance the whole series of organisms which have been described by various observers as existing in the blood of malarial patients. The segmental organism which Professor Osler, of this city, first stated to be peculiar to the period just before or during the chill he found in a large number of cases always at this period, and believes it to be a characteristic of the stage. The crescentic organism he found solely in malarial cachexia, in which affection, when intense, it often exists in extraordinary abundance. Dr. Councilman found no difficulty in obtaining blood directly from the spleen with a hypodermic syringe. He always took the precaution to throw the whole syringe into boiling water before using it, and never saw any evil results follow the plunging of the sterilized syringe-needle deep into the splenic tissue. The blood of the

spleen was found to be especially the home of the various organisms, and it was chiefly from it that the flagellated form of the organism was obtained.

The effect of the administration of quinine upon these organisms was carefully studied. The influence of large doses of the alkaloid upon the most characteristic organism—namely, that which accompanies the acute intermittent and is characteristic of the chill period—was most pronounced. Fifteen grains of quinine given daily for three or four days would often be followed by the almost complete disappearance of the organism, and whilst the administration of 45 grains daily for three days always caused the organism to disappear completely. On the other hand, the crescentic organism of the malarial cachexia did not appear to be particularly affected by quinine. Thus in one case 45 grains a day of the alkaloid were given for six successive days, and then 60 grains a day for three successive days, but at the end the crescents were about as numerous in the blood as they had been before any drug was given. Dr. Councilman has made a limited number of transfusions of malarial blood into the blood of a rabbit, and has repeatedly found the organisms in the blood of one ear a few moments after malarial blood had been injected into the other ear. In a number of cases the crescentic organism was found to be embedded in one of the white blood-corpuscles, and apparently white blood-corpuscles in a manner seize the foreign organism and destroy it.

During the discussion of this paper Dr. Osler made a statement that a Canadian medical friend insists that the wild geese coming southward to the malarial flats of Southern Canada frequently suffer from malarial fever, and that he himself examining the blood of one of these geese had found one or two organisms which he could not distinguish from those of the malarial human blood.

Dr. Councilman's researches undoubtedly strengthen the theory that the organisms in the blood are the cause of malarial fever, although it cannot be considered that this theory is proven. As therapeutists we are especially interested in the effect of quinine upon these organisms. The relations between the chill organisms and the crescents are extremely obscure, no observer having as yet traced any intermediate state. Arsenic was found by Dr. Councilman to be without apparent influence upon the crescents. Now, if the crescents are the cause of malarial cachexia, why is it that

they are not influenced by quinine and arsenic, although these agents will cure chronic as well as acute malaria? No satisfactory answer was given by Dr. Councilman, or, indeed, can at present be given to this inquiry.

MAMMARY ELIMINATION.

THE question of elimination of drugs from the mammary glands of the female is one of practical interest. Our own experience leads us to believe that only in very rare instances do medicinal substances find their way into the mother's milk in sufficient quantities to affect the offspring. This conclusion is measurably confirmed in a paper recently published in the *American Practitioner*. Dr. John G. Cecil there concludes that it is practically impossible to medicate the child through the nurse's milk; on the other hand, he advances evidence to show that certain narcotics, and even other substances, may sometimes find their way into the lacteal fluid in sufficient quantities to produce acute poisoning in the child. Every one knows that the oil of garlic will in the spring appear in cow's milk in sufficient quantity to be disagreeably recognized. Among the cases cited by Dr. Cecil several seem to us worthy of especial note.

Opium.—In the *American Journal of Obstetrics*, June, 1885, is reported by Dr. O. W. Doe a case of galactorrhœa in which, the patient being restless and nervous, 20 drops of tr. aceti opii, with 30 grains of potas. brom., were given at 10 A.M., but no sleep followed. The baby, on the contrary, could not be roused during the whole day sufficiently to nurse; the pupils were markedly contracted, and the narcotism was so pronounced as to give rise to much anxiety. According to Dr. Cecil, an infant two days old, in Manchester, England, died soon after taking the mother's breast for the first time. The symptoms were said to have been those of opium-poisoning. The mother was a habitual opium-eater, using weekly about an ounce of the drug. A similar case was reported in *Annales de Gynecologie* for August, 1876. Those of our readers who have noted in our review of Dr. Erlenmeyer's book the statement that infants born of opium-eaters are very liable to sudden collapse after birth for want of opium, will agree with us in thinking it possible that in the two cases just cited the children died from lack of opium rather than from opium-poisoning. Dr. Fehling found that hypo-

dermic injections of morphine given to the mother do not affect the child. The explanation of opium-collapse cannot, however, apply to a case reported by Dr. Cecil himself, in which the child was six weeks old.

Atropine.—Dr. Schling reports in the *Journal de Médecine*, February 20, 1887, some experiments with the alkaloid of belladonna. Hypodermic injections of $\frac{1}{15}$ to $\frac{1}{20}$ of a grain of atropine produced a decided impression on the mother. Dilatation of the child's pupils followed, which disappeared in twenty-four hours. Dr. Ouchterlony gave to Dr. Cecil the record of a case in which, after the administration of hyoscyamus to the mother, the child's pupils became widely dilated and its face flushed, and other symptoms of poisoning appeared, which subsided upon the withdrawal of the remedy.

Salicylate of Sodium has been found by Fehling and Schling in the child's urine about one hour after its administration to the mother. *Mercury* was at one time frequently administered to the mother for the purpose of affecting the child, but the practice has gone into desuetude. Conjoined clinical and experimental evidence seems to show that although the mercury does pass from the mammary glands occasionally, its elimination is too feeble and too uncertain to be relied upon. There is reason for believing that the *iodides* are more frequently eliminated with the milk, and Dr. Cecil records a case of marked iodism in the babe following the exhibition of the drug to the mother.

Arsenic and *antimony* appear to pass with some readiness through the mammary glands. (See *Journal of the American Medical Association*, September 12, 1885.) M. Gabriel Bouchet, to determine whether *arsenic* is eliminated by the milk, gave Fowler's solution in large doses to a number of wet-nurses, and found a notable quantity of the metal in the milk. Lewald states that he has found arsenic in the milk seventeen hours after its ingestion, and that even forty hours later the metal could be detected.

QUARANTINE AGAINST CHOLERA.

AT a discussion in the College of Physicians, held on October 27, the special committee that had been appointed to examine the condition of the quarantine at New York, Philadelphia, and Baltimore made a long and very able report upon the subject. This report revealed a condition of affairs

most extraordinary, and which, unless remedied, must before long lead to an outbreak of cholera that will probably spread throughout the whole United States. When it is remembered that there are in this country fifty millions of people, who are continually travelling to and fro, that many of our cities are filthy, and that cholera is a disease that spreads with extreme and uncontrollable rapidity, the importance of the subject becomes apparent. A personal careful investigation by the committee showed that in neither of the cities was there proper provision for the prevention of the ingress of the disease. The details of this report will, without doubt, be printed in most newspapers of the United States before the THERAPEUTIC GAZETTE can get to press, and we do not therefore occupy space with them, but content ourselves with calling attention to certain potent facts.

In the first place, the treatment of the passengers of the affected ships in New York harbor seems to have been simply abominable. Hundreds of men and women, some infected, others not, were for several days crowded in a single large room. They had, at least at first, no bedding at all, and when bedding was received it was simply thrown upon the floor, and during the day piled up in heaps, no care being exercised to see that the same individual had the same blankets on successive nights. There were no proper latrines, no proper protection of the water-supply from infection, and the system of disinfection was so bad that for several days the unfortunate people had no access to any clothes save those on their back. There was no isolation of the groups of passengers, and no attempt at separation of the possibly infected from the well. There was no medical attendance upon the island during the night. Any person taken with cholera at such time had to remain without assistance among the well persons until the visit of the health-officer the next day. Even in the hospital upon an adjacent island, with its ill and dying patients, there was no resident physician, and therefore no proper surveillance of the patients, who apparently were visited only once in twenty-four hours.

In the second place, the police supervision was so faulty as practically scarcely to exist, and there can be no doubt that boats passed freely between the infected island and the shore. If under such circumstances cholera has died out, an old-fashioned coroner's jury sitting upon it would be well justified in

bringing in the old-time verdict, "Died by the grace of God."

In the discussion at the College of Physicians which followed the reading of the report of the committee, Dr. J. C. Peters, of New York, made some statements as to the cause of the inefficiency of the New York quarantine. He said that it was due to lack of money, although the receipts of the office are estimated at from sixty to one hundred thousand dollars a year. Of this money ten thousand goes to the medical health-officer, seventeen thousand to the expense of the office, and the remainder, according to Dr. Peters, fades away,—it being generally understood that the quarantine office is the main reliance of one of the political parties in the State of New York for campaign expenses. The question naturally arises, Is it quite proper that the whole United States of America should be exposed to a decimation of its people in order that a political party in New York State may maintain a struggle for supremacy? Perhaps the sacrifice may be worth making for the end, but we have ventured to doubt it.

Probably after the country has been ravaged by cholera the wise men at Washington who rule so unwisely will rise above local jealousies and local feelings and devise a general quarantine law to be enforced by the United States authorities,—a law which if put in operation now might save thousands of lives. New York commerce is of course of importance to New York, but New York is simply one of the gate-ways to the United States, and surely the people of the United States have as much interest in the question of the entrance of contagious disease as have the people of New York themselves. If the United States government have a right to interfere with the commerce of New York, as it does by taxation, it must also have the right to further interfere as far as may be necessary for the protection of the people. Quarantine is not a local, but a general question. The gate-ways to the country are many, and the series of quarantine stations make a chain whose strength is measured by that of its weakest link. A little port upon the Atlantic, powerless from poverty to enforce proper quarantine regulations and to make proper provisions for those who are detained, may become the starting-point for a wave that shall sweep like a besom of destruction over the whole country. Moreover, at present a city is not responsible for its own quarantine and is not able to protect itself. The State of New York, not the city of New

York, dominates the quarantine station at New York, and if such a great Commonwealth, vastly superior in its intelligence and in its wealth to almost any other State of the Union, prefers to steal from its own quarantine stations money for political purposes, what can be expected of a small State like that of North Carolina, with its port of Wilmington, perchance poor, struggling with debt, and really unable to properly protect itself from disease-invasion?

CALOMEL AS A DIURETIC.

THAT various mercurial preparations are capable of acting as powerful diuretics is well known from the observations of Jendrassik, Stiller, Leyden, Fürbringer, Rosenheim, Senator, and others. It seems to be clearly established that calomel under certain circumstances is a most active diuretic, while under other conditions, as the readers of the *GAZETTE* will remember from articles already published on this subject, failure attends its employment under these indications. The conditions under which the greatest divergence of opinion obtains as to the value of calomel as a diuretic is in the case of hepatic diseases, in which condition authorities may be referred to who claim on the one side positive and on the other entirely negative action. This state of affairs is somewhat simplified by a paper published by Dr. W. P. Meyjes in the *Deutsche Medicinische Wochenschrift* for September 1, 1887. Dr. Meyjes tested the diuretic effects of calomel in fifteen cases in the clinic of Professor Pel. In eight of these cases a positive result was obtained; in the other, the diuretic action was slight or completely negative. His cases fall under the following groups: 1. Degeneration of the heart-muscle; 2. Organic heart-failure, with insufficient compensation; 3. Diseases of the liver; 4. Dropsy from other causes than those referred to. In the first two of these groups Dr. Meyjes's result confirmed other observers, the result being, as a rule, favorable, although he did not succeed in obtaining as striking effects as have been claimed by others. In the group of diseases of the liver his results are strikingly successful, with the exception of a single case of cirrhosis of the liver, where calomel was employed for three days with no evident results. On the other hand, two cases of gall-stone treated by this method are re-

ported, in which a marked diuretic effect was produced, and a reduction of the jaundice and suppression of the attacks of colic. In the fourth group, which includes cases of anæmia resulting from various cachectic conditions, kidney-affections, malarial or spinal disease, in no instance was the use of calomel followed by any improvement. Dr. Meyjes likewise discusses the cause of this production of diuresis by calomel, but with no further success than in attributing to calomel a specific diuretic action.

HYPODERMIC INJECTIONS OF CARBOLIC ACID IN CASES OF RHEUMATISM.

ACCORDING to the Vienna correspondent of the *British Medical Journal*, October 8, 1887, Professor Benedict has been using with extraordinary success hypodermic injections of two per cent. solution of carbolic acid in the treatment of rheumatoid affections. He asserts that in even a few months after the injection into the part the joint will be freely movable and free from pain as though narcotized, and in recent cases joints in which there was great tenderness on pressure and distinct swelling of the bones would be apparently free from disease a few days after the injections; not only would the pain disappear in the joints in whose neighborhood the injections had been practised, but would be markedly lessened in distant joints. Professor Benedict believes that the carbolic acid has not only a local influence, but a general effect in causing the elimination of the rheumatic poison. He has especially obtained good results by the simultaneous use of salicylic and carbolic acids when the salicylate of sodium is administered by the mouth in small doses, and one to three subcutaneous injections of carbolic acid being given in twenty-four hours, the course of the affection was very much accelerated, and no bad consequences were observed, especially if the treatment was carried out from the very beginning of the disease. Extraordinarily good results were obtained by the method in cases of inflammation of the sheaths of tendons, especially after injury. A few injections sufficed to cut short the morbid process, and no local pain or muscular atrophy, etc., was observed, provided the disease was treated in the above-mentioned way from the very outset.

ACETPHENETIDIN, A NEW ANTIPYRETIC.

KOBLER, of the medical clinic of Professor Bamberger in Vienna, describes his observations with this, the latest antipyretic, in the *Centralblatt für die Gesamte Therapie* for August, 1887. The formula for the composition of this substance may be written $C_6H_4NH.O.C_6H_5(CO-CH_3)$, its composition being analogous to that of antifebrin. It is a faintly reddish, odorless, and tasteless powder, very sparingly soluble in water, more soluble in glycerin, most soluble in alcohol, especially when hot. It is insoluble in acids or alkalies, and experiments have shown its insolubility in gastric juice and extract of the pancreas. After the use of the drug with healthy persons, in doses of from 8 to 10 grains, no effect was observed. In healthy persons body temperature was not influenced, while in fever patients, even after doses of 5 or 6 grains, a fall in temperature always occurred. In the writer's first use of the drug, as it was unknown, only small doses were employed,—from 3 to 6 grains; and after such doses a slight fall of temperature, persisting for a short time only, was observed. Doses of 8 grains were given afterwards, and finally it was the custom in the clinic to order 9 or 10 grains, as the doses previously given produced too feeble an effect. No especial idiosyncrasy against the drug was observed. The vomiting and depression so often observed after other antipyretics was never seen. As it is tasteless it was given in wafers, only to convey it better into the intestine. The drug was used in forty-eight cases,—eleven of pulmonary tuberculosis, ten of croupous pneumonia, seven of typhus abdominalis, six of measles, four of puerperal sepsis, three of pleurisy, two of pyæmia, one of a typhoid relapse, one of cerebro-spinal meningitis, one of acute purulent peritonitis, one of parametritis, and one of angina. The patients were generally between twenty and forty years old, one case a child of 9 years, ill with measles, on whom the dose of 3 or 5 grains produced a marked fall of temperature. In this case, as is usual in measles, continual high fever and well-marked bronchitis were present, in addition to the subjective symptoms. In no morbid process could a specific effect upon the disease be observed, but it was equally true that the effect of the drug was not to prolong any disease, as has been observed in the case of some other antipyretics.

Of ten cases of pneumonia treated with acetphenetidin six ended by crisis, and gen-

erally on the fifth or sixth day; among these was a case of Bright's disease. The drug was well borne in these cases, as it was also in another case, where, in addition to double pneumonia, acute nephritis was present. The patient was a person aged 20, who, while nursing three children ill with severe diphtheria, contracted a pneumonitis. The case bore the marks of an acute septic infection. As an antipyretic acetphenetidin was given in doses of 10 grains to 24 grains in twenty-four hours, without producing any symptoms of intoxication. The drug was apparently not irritating to the diseased kidney, as the quantity of blood in the urine became steadily less while the drug was taken, while the quantity of albumen contained was not influenced. The patient made a good recovery. The writer used the drug in question in accordance with the usage of Professor Bamberger, viz., to give antipyretics only when the temperature rises so high as to be dangerous to the organism and to its life. This drug, therefore, was given to patients whose temperature was 103.1° F., or 104° F., or 105° F. In these cases a fall of temperature of three or five degrees followed the administration of the drug. This fall of temperature occurred promptly after the taking of the drug. By allowing the thermometer to remain in the axilla it was observed that during the first quarter of an hour the temperature rose, but at the end of half an hour the temperature began to fall, and continued to fall from one-quarter of an hour to another one-tenth or two-tenths of a degree, so that after from four to six hours the maximum fall had occurred, for example, from 104.8° F. to 102° F. When the reduction had become established the temperature gradually rose in two or three hours one-tenth of a degree, and in the same ratio higher, until after eight or ten hours no effect of the drug upon the fever was apparent. The fall of temperature is generally more abrupt than the rise. The drug resembles all other antipyretics in the fact that its effect is most pronounced when given late in the afternoon or in the evening; it thus combines the natural depression of temperature with that generally produced by drugs. If the drug be given in the morning or early in the forenoon, a second dose will often be required to combat the usual tendency to rise of temperature at this time. In the case of a phthisical patient, the usual evening rise of temperature was completely prevented. The course of these cases was generally this: that by the administration of

the drug at ten or twelve in the forenoon, between four and six at evening the temperature became normal; at eight, ten, or twelve at night the temperature rapidly rose again, so that all traces of the original exacerbation had gone. This rapid rise of temperature was not, however, attended by chills or uncomfortable sensations, either in phthisical patients or the acute diseases.

As a rule, the rise in temperature was not attended by perspiration. Only in the cases of four phthisical patients, and one of a relapse in typhoid fever, did profuse perspiration follow the administration. These are the patients who are disposed to perspire freely, and with whom caution should be exercised in administering the drug. In one of these patients the experiment was made of attempting to prevent rise of temperature by the administration of doses of 5 grains of the drug every two hours. The second dose was given before the first had fully established its effect. In four hours' time, in addition to profuse perspiration, a sensation of chilliness and a rectal temperature of 95° F. resulted. It is worthy of note that, with other patients, this same mode of administration was employed without bad effects, and was apparently less energetic than the method of administration in larger doses. Among fever patients cyanosis and collapse never followed the use of the drug. It was especially noteworthy that in ten cases of pneumonia—a disease in which cardiac weakness is so often present—this phenomenon never appeared while this drug was used. On the contrary, the frequency of the heart's action was diminished, the filling and tension of the pulse were increased, phenomena which were not entirely due to the reduction of temperature, and which show that acetphenetidin is at least in no way injurious to the central organ of the circulation. By the great majority of patients a sensation of general well-being was a speedy result of the drug's action. The patients feel much lighter and more energetic, propose voluntarily to move about, and also to take food. If we are to accept this effect as a criterion for the use of an antipyretic, the drug under consideration is certainly of value in therapeutics. A diuretic effect was not observed. The urine was dark yellow in color; with ferric chloride a Burgundy-red color was produced, as is the case with many aromatic substances. The indophenol reaction was evident on using 9 grains of the drug. The urine of a patient taking this substance generally reduced an alkaline copper solution

very decidedly, but the reaction was not always present. Fischer's phenylhydrazin test was always negative, and sugar was not present. An increased passage of albumen, while taking the drug, was never observed. An increase in sulphates, as was found in experiments upon animals, could not be recognized after the use of small amounts of the drug.

The writer concludes that (1) acetphenetidin is an efficient antipyretic; (2) it produces no ill or unpleasant after-effects; (3) the dosage is by quantities of 1½ grains; (4) the administration of a considerable dose (8, 9, or 10 grains) is more useful than the repetition of small doses hourly or every two hours.

FRACTURE OF THE SPINE.

THE hopelessness of cases of fracture of the spinal column under the old expectant or do-nothing line of treatment is so complete that we do not hesitate to express our conviction that the surgeon should always endeavor to replace, if possible, the broken portions of the bone, and when the deformity is reduced, maintain a proper position by means of the plaster jacket or other similar mechanical contrivance. In a late number of the *Boston Medical and Surgical Journal* Dr. H. C. Burrell records five cases treated in this way in the Boston City Hospital with two recoveries. Usually the patient should be anesthetized and an attempt made to reduce the fracture whilst the body is in a prone condition. If this fail, suspension according to the method of Sayre should be essayed, although the procedure involves some danger of rupturing the spinal cord and, if the fracture is high up, of causing immediate death. The surgeon is, to our thinking, justified in taking this risk.

THE ANTIVIVISECTION AGITATION.

THE Philadelphia Society for the Restriction of Vivisection has recently indicated the true object of its existence, namely, the suppression of vivisection, by the publication for popular circulation of "Illustrations of Vivisection, or Experiments on Living Animals;" from the works of physiologists as reproduced in 'Barnard's Martyrs' and 'Light in Dark Places,' by Miss Frances Power Cobbe." In this pamphlet it is affirmed that society is in the face of a new vice, namely, the vice of scientific cruelty, and

that vivisection ought to be stopped. Miss Cobbe says, "The vivisector ought to be stopped in pursuing his (otherwise) lawful end of advancing physiological science, by his consideration that the means of advancing it involve a moral offence (theologically viewed, the sin), of causing torture worse than death to guiltless creatures. This consideration, as has been said, ought to stop him, just as any other man ought to be stopped in pursuing any legitimate end (*e.g.*, the advancement of the interests of his country or family) if he find he cannot carry it out without employing immoral means,—deceit, robbery, persecution, treachery, or any other unrighteous mode of action."

As this pamphlet has no immediate interest for our readers, being intended for popular circulation, we would not have occupied space with it had it not been for the persistent attempt of members of the medical profession to produce the impression that they are co-acting with the Philadelphia Society only in the endeavor to confine physiological experimentation to competent persons, and have no sympathy with the attempt to suppress the practice.

TREATMENT OF GONORRHOEA.

IN an elaborate article in the *New York Medical Journal*, October 8, 1887, Dr. O. T. Osborne discusses the question as to the specificity of gonorrhœa, and comes to the conclusion that it is proved beyond controversy that the gonococcus of Neisser is a special microbe which produces the disease, and that therefore the disease is specific. Notwithstanding this theoretical conclusion, Dr. Osborne asserts, as the result of his own experience, and as the general conclusion of most writers, that the abortive treatment of gonorrhœa with corrosive sublimate injections is unjustifiable and unsatisfactory, and that even weak antiseptic injections are to be combined with constitutional treatment. Our own experience is in accord with that of Dr. Currier, in believing that the use of large quantities of bismuth is the best treatment for the early stage of the disorder. Dr. Currier, as quoted by Dr. Osborne, employs an injection of bismuth and glycerin, 1 drachm to the ounce. We have always used the bismuth simply suspended by mucilage in water, giving the patients direction to shake the

bottle well before using, and to let it habitually stand on the cork so as to prevent the bismuth from caking at the bottom.

NERVE-SUTURE.

IN the clinical notes of the *British Medical Journal* of October 8 is reported a case, operated on by Mr. Croft at the St. Thomas Hospital, in which the tibial and femoral arteries and the posterior tibial nerve had been cut by a stab. The ends of the posterior tibial were found retracted an inch and a half, but were carefully sutured together with very fine silk and the wound dressed antiseptically. Twenty-four hours afterwards "sensation was observed to be present all over the foot, but modified in character in the sole." Five weeks later the leg was entirely well, the boy having perfect use of, and perfect sensation in, the foot and leg.

A NEW THERAPEUSIS IN EPILEPSY.

ANY person who shall discover or invent a method for treating epilepsy which shall cure even a moderate percentage of cases will be a great benefactor, not only of the human race but of the ordinary neurologist, whose sympathies are often excessively worked upon by failures to bring decided relief under circumstances most pitiable. It is, therefore, with great desire, although with much incredulity, that we approach the subject of the method of treatment of epilepsy devised by Dr. George T. Stevens, of New York. The central idea of this plan of treatment is that a large proportion of cases of epilepsy, as well as of chorea and of other forms of nervous disorder, are due to an unsuspected weakness of some of the optic muscles, which produce perpetual irritation by the excessive effort necessary to bring the ocular axes into unison. We understand that Dr. Stevens has prepared an elaborate work upon this subject, which will soon be before the medical world. Until this has appeared we do not propose to discuss the subject in detail, but simply to call attention to it. In an article in the *Medical Bulletin* for September, Dr. Ambrose Ranney confirms the work of Dr. Stevens. In order to correct the small degree of insufficiency which produces these nervous irritations, it was necessary for Dr. Stevens to invent a new operation, as the older plan of entirely severing the muscle is almost always followed

by an excessive result. This operation in the main consists of making a small opening through the conjunctiva, exactly over the insertion of the tendon, when the tendon is seized by extremely fine forceps, and divided in each direction, preserving the extreme outer fibres, or, at least, the reflection of the capsule of Tenon, which serves as an auxiliary attachment.

THE DOCTOR'S CARD.

IN a recent number of the *Canada Medical and Surgical Journal*, Dr. William Osler calls attention to the subject of doctors' cards. The subject may seem a trifling one, and yet the spirit of quackery may be revealed in the doctor's daily card as well as in his door-plate. The English physician usually has upon his card his name alone, with perhaps the address of his house or club. The American physician's card is apt to be large and boldly printed, and sometimes contains his titles or official positions, and still more frequently his address and office-hours. The door-plate is usually a reflex of the card. The principle involved in each of these methods of making the identity of the doctor known is, according to our thinking, the same. In each instance the desire should be to afford knowledge to those who are seeking it, rather than to attract the attention of those whose ears have not been already tickled by the fame of the physician. The door-plate should be inconspicuous, and yet not hard to find. The card should be modest, and always engraved instead of printed, and contain no titles other than that of doctor. As a direction to patients, the office-hours should be placed in the corner of the card. When this is done, the card becomes a purely business card, and no one who closely studies the proprieties of life would leave such a card upon social occasions. The doctor should, therefore, have two distinct cards,—the visiting and the professional card.

SANTONIN.

FEW Anglo-Saxons have been more energetic or more willing to take risks than the Russian traders, Messrs. Ivanoff and Sawinkoff, who, in 1883, followed the Russian arms in Turkestan by transporting, nearly

three thousand five hundred miles on camels' backs through a dreary steppe, the machinery for the preparation of santonin. They are said to have spent between them three hundred and twenty-five thousand dollars in this work; and when the difficulties of communication between Turkestan and Nijni Novgorod, the nearest central station, are remembered, the boldness of these financial princes will be clearly seen. The hydrochloric acid used has to be carried in wagons two thousand miles across the wastes and deserts. Out of sixty tons which were sent in one wagon-train of one hundred and seventy wagons, no less than thirteen tons were said to have been lost by breakage. Formerly nine hundred to a thousand tons of the flower-heads of *Artemisia maritima* were yearly sent to Novgorod, *en route* to Western Europe. All this traffic is put an end to, save only as regards so much of it as is intended for the United States, the very heavy import duty upon santonin in this country preventing the importation of the manufactured article. The Turkestan works are said to have turned out ninety thousand pounds of santonin in 1885, of which the Japanese are affirmed to have taken fifty thousand pounds. Either the Japanese intestine must be a most extraordinarily rich soil for worms, or the people must employ the remedy for purposes not known to Western civilization.

AVELOZ.

IN the United States consular reports for October, 1884, attention was called to the use of the juice of aveloz in Pernambuco as a remedy for the treatment of cancer. The plant which yields it is said to belong to the family of Euphorbiaceæ, and to have been described in 1875 in Martin's "*Flora Brasiliensis*" under the name of *Euphorbia heterodoxa*. It is used as a local application, and is asserted to have been found especially valuable in the treatment of epithelioma. In sarcomatous and carcinomatous diseases it has not yielded so good results. In order to keep the juice, it is mixed, when fresh, with salicylic acid, which is said to preserve it without affecting its medical properties. Most of the Euphorbaceous plants contain an acrid juice, which is powerfully irritating to raw surfaces, or even escharotic, and of such nature seems to be the remedy in question. Its value has been confirmed by Dr. J. E. Janvrin in the "*Annals of Gynecology*," vol. i. No. 1. He has obtained

excellent results from its employment in epitheliomatous uterine diseases. He says he prefers it as a local application to any other escharotic in such cases of epithelioma of the cervix as are not far advanced, and in which for any reason it has been decided not to extirpate either the cervix or the entire uterus.

Even when the disease is so far advanced that any other operation than curetting is contraindicated, the application of aveloz once or twice a week has proved very effective in diminishing pain (after the immediate pain produced by the application has ceased), and in decreasing the quantity and offensiveness of the discharges, thus prolonging the life of the patient, and making her presence much less objectionable, for a while at least, to those in constant attendance upon her.

GLEDITSCHINE.

OUR readers will remember that in our August and October numbers we expressed editorially some doubt as to the genuineness of the so-called gleditschine. This suspicion has been abundantly confirmed during the last month. The solution has been analyzed by three chemists, entirely independently of each other. Mr. F. H. Thompson, chemist of Parke, Davis & Co., published his article in the *Medical Age*, Professor F. G. Novy published his in the *Pharmaceutische Rundschau*, and Dr. John Marshall, Demonstrator of Chemistry in the University of Pennsylvania, his in the *Philadelphia Medical News*. The analyses are substantially in accord in showing that the solution sold as a two per cent. solution of the new alkaloid contains about six per cent. of cocaine salt, and, besides, some atropine or other alkaloid of the mydriatic group.

In connection with this subject it is very interesting to note that in 1878 (*Philadelphia Medical Times*) Dr. B. F. Lautenbach made a chemico-physiological study of extracts made from the fruit *Gleditschia triacanthæ* and *G. ferox* as growing in the parks around Geneva. These extracts he found to produce in the frog stupor and a loss of all reflex activity. That this loss was due not to an influence exerted either upon the motor or sensory nerves was proven by the fact that it was not prevented by tying the artery of a leg, and thereby shutting off access of the poison to the muscles and nerves. It must, therefore,

be spinal. Dr. Lautenbach did not make any study as to the possession of local anæsthetic properties by this alkaloid, although the contrary has been asserted by one or two observers. He obtained the alkaloids in the form of rhombic crystals, almost completely insoluble in water, but readily soluble in alcohol, capable of forming salts with acids, and acting upon frogs precisely as did the extracts. To this alkaloid Dr. Lautenbach gave the name of gleditschine.

THE INDEX CATALOGUE.

THE appearance of the eighth volume of this gigantic work shows that Dr. Billings and his associates are still persistently laboring on, and strengthens the hope that the time may come when the whole work shall have reached temporary completion. The growth of medical literature is so rapid that, even if the "Index Catalogue" does catch up to the library at Washington, volume after volume must still appear to keep the work abreast of the ever-advancing tide. The present volume includes thirteen thousand four hundred and five titles, twelve thousand six hundred and forty-two subject-titles of separate books and pamphlets, with twenty-four thousand one hundred and seventy-four titles of articles and periodicals, and is said to mark the completion of the first half of the work.

BIDENS BIPINNATA.

THIS common weed, usually known as beggar's tick, or Spanish needle, has long been used as a remedy in asthma and bronchial catarrhs by irregular practitioners in the United States, but, so far as our knowledge goes, has not attracted the attention of the regular profession, although mentioned in the United States Dispensatory. In a letter recently received by Dr. C. R. Gaul, of Jacksonwald, Pa., it is stated that he has employed the remedy (in the form of a decoction) with extraordinary success for the relief of hay-asthma. If any of our readers can give further information on the subject we would be obliged for a communication.

Reports on Therapeutic Progress.

DIAGNOSTIC VALUE OF THE GONOCOCCUS IN GONORRHOEA IN WOMEN.

According to the Swiss correspondent of the *British Medical Journal* for October 15, 1887, DR. CONRAD, at the spring meeting of the Medicinisch-Pharmaceutischer Bezirksverein of Berne, read an able paper on Neisser's gonococcus and its diagnostic value in female cases of gonorrhœa. Is it possible to differentiate a gonorrhœal affection of the female genitals from a non-gonorrhœal one by means of the microscopical examination of secretions and cultivation experiments? Such was the problem the author laid before himself, and tried to solve by special researches of two and a half years' duration. Dr. Conrad carried out his valuable researches in the following way. Having come across a case of acute, purulent, or mucoid catarrh of the vagina, womb, or urethra, where the affection had again and again recurred, or been followed by a very acute or chronic inflammation of the genital tract, or where there was a more or less clear history of gonorrhœal infection, he gathered (with due precautions and at several different times in every case) some discharge from the deeper portions of the cervix and urethra, and then subjected it to the bacterioscopic examination, conjointly with Drs. Emmert, Jr., Von Freudenreich, and Sahli, the observers (all experienced bacteriologists) working independently of each other. Sixty cases of supposed gonorrhœa were carefully studied after that plan. Only in five recent and in two chronic cases were characteristic groups of Neisser's microbe detected; in several other instances only a few isolated gonococci were found; in many other patients numerous bacilli and cocci could be seen, which by some authors are regarded as constant satellites of Neisser's micro-organism, but which also occur alone in chronic simple catarrhs. Cultivation of the discharge from twelve cases (including those where the gonococcus had been found) gave entirely negative results (the nutritive media employed being agar-agar and Kemerisch's peptone gelatin). The general conclusions arrived at by the author are these: 1. Detection of the gonococcus succeeds more easily and more frequently in men than in women. It is so because the latter (a) experience comparatively less discomfort from acute gonorrhœa, where the microbe is most frequently demonstrated; (b) they generally

seek medical advice and help far later than men; (c) as a rule, they pass water before undergoing a gynæcological examination and thus wash away or dilute their urethral discharge; (d) they sometimes come to be examined only after some treatment by injections or other local means. It is possible also that the detection becomes more difficult in consequence of gonococci being destroyed by micro-organisms of other species, which often grow luxuriantly in discharge of genital mucous membranes, "the female genital tube being a true natural incubator (*brutofen*) favorable to any bacterial growth." 2. While in recent cases of female gonorrhœa Neisser's gonococcus may be almost always detected, it cannot possibly be found in many chronic cases. 3. Hence both acute and chronic gonorrhœal affections may be present in women, in spite of our inability to demonstrate the pathogenic microbe in a given case. If so, the gonococcus may have only a limited diagnostic value, the practitioner being often compelled to rely only on etiological and clinical facts. Nevertheless, the practitioner must undertake a bacterioscopic examination as often as possible in every individual suspicious case, since detection of the microbe is of paramount importance as regards diagnosis, prognosis, and treatment of the case. In addition, Dr. Conrad states he obtained satisfactory results from treating (1) gonorrhœal catarrhs of the female genitals by vaginal injections of acetum plumbi, sulphate of zinc, and corrosive sublimate (1 to 2000); (2) very obstinate cases by dressing the vagina with iodoform, iodol, zinc milk, and salol gauze, as well as by "Paquelinizing" (*Paquelinisirung*) erosions; (3) urethritis by the internal use of santal oil (in gelatin capsules); (4) chronic gonorrhœal uterine catarrh (without any further complications) by *raclement*, with subsequent intra-uterine injections of tincture of iodine. Supreme importance, however, should be ever attached to prophylaxis. The strictest surveillance over prostitution, prohibition of marriage and coitus to every gonorrhœal male patient until every trace of discharge has disappeared; an urgent appeal to every man of the kind that he should not neglect his (chronic) affection, however slight, but should submit to treatment till he is completely cured (since otherwise he will most cruelly sin against his wife and children). Those are preventive measures against formidable prevalence of gonorrhœa, most justly and forcibly insisted on by the author; justly, because chronic gonorrhœa is but only too

often regarded by non-medical men as of no importance, and that not only in Switzerland, but also in other countries. In the course of a prolonged and interesting discussion which Dr. Conrad's paper gave rise to, Drs. Emmert, Dick, and Sahli and Professor Demme also expressed their belief that while the gonococcus can, with certainty, settle the question in regard to a specific nature of the case, a negative result of the bacterioscopic examination by no means excluded gonorrhœa. Dr. Emmert pointed out that the outcome of his and Conrad's researches seemed to pretty well coincide with that of Welander's, a Swedish practitioner who had published his observations in 1884. Especially Dr. Emmert drew attention to the fact that the genuine habitat of the gonococcus appeared to be discharge of the urethra, and not that of the vagina, since, when the microbe was found in the former, artificial inoculation of the vaginal mucous membrane almost invariably produced gonorrhœal vaginitis, while inoculation of the vaginal discharge from a gonorrhœal woman in the vagina of a healthy one had no bad effect. Dr. Dick mentioned that he obtained satisfactory results from treating female gonorrhœa by a two per cent. solution of thallin (as recommended by Professor Goll, of Zurich; see the *Journal*, May 21, 1887, p. 1133). Professor Demme stated that he, while experimenting after all possible methods, was unable to obtain any cultures of gonococci. Hence he doubted whether Professor Kreis (who had been able easily to cultivate the microbe in agar-agar) had had to do with a true gonococcus. The same opinion was expressed by Dr. Tavel. Dr. Sahli asserted that the microbe could not be demonstrated very often even in such female cases where it mattered about gonorrhœa with certainty, or at least with a great probability. Thus, he was not able to detect it in a patient with a profuse purulent vaginal discharge, who had been recently infected by a man with a typical gonorrhœa and with masses of gonococci in his urethral discharge. Only some extracellular diplococci were discovered in the woman. Dr. Sahli ascribes the difficulties which beset the detection of gonococci in female cases mainly to the possibility of their being crowded out by other vaginal fungi of non-pathogenic and "half-pathogenic" varieties. By "half-pathogenic" (*halb-pathogene*) the author means bacteria which give rise to inflammatory processes only when they are present in considerable quantities, or when the system is already weak-

ened or injured in some other ways. (As an example of such "half-pathogenic" microbes, Dr. Sahli adduces bacteria occurring in catarrhal pneumonia: they are purely saprophytic; but when the inner surface of the lung is damaged by bronchitis, they begin to grow luxuriantly and set up inflammation, partly by mechanical irritation and partly in virtue of a chemical action of their metabolic products.) As to male cases of chronic gonorrhœa, the author denies that Neisser's microbe was often absent in them. At least, having examined a number of cases of the kind, he was invariably able to detect the gonococcus, even after a very prolonged existence of the disease.

DECOCTION OF LEMON IN INTERMITTENT FEVER.

DR. R. A. LANCASTER, of Gainesville, Fla., writes in the *Medical Record*, October 8, 1887, as follows: "For two years or more I have been using the decoction of lemon, as recommended by Dr. Crudeli, for the prevention and the cure of intermittent fever. In many cases it acts 'like a charm,' even where quinine and arsenic have failed to prevent frequent returns of the chills. It is especially serviceable in that class of patients that we sometimes meet with, who cannot take quinine without experiencing such unpleasant symptoms as urticaria, nausea, headache, nervousness, etc. In my experience the lemon decoction has proved much more efficacious than arsenic in preventing the recurrence of the chills after they have been broken with quinine, and in one case, at least, it promptly relieved the chills where large doses (twenty grains per day) of quinine had failed to do so. About twelve months ago, Patrick M—— applied to me for treatment, declaring that he had had a chill and fever every day for a week, although he had been taking daily, under a physician's directions, twenty grains of quinine and thirty drops of Fowler's solution of arsenic. I stopped the quinine and arsenic and put him upon the lemon decoction, and the result was prompt relief. I met the same patient again a few days since, and he told me that he had several times had a return of the chills, but they were always promptly relieved by the lemon. He said that he had never had a chill upon the same day on which he took the lemon. In quite a number of cases where there had been a recurrence of the chills on the seventh, fourteenth, or twenty-first days, this habit was broken up by

using Dr. Crudeli's remedy two or three days each week. My usual plan for treating the intermittent type of malarial fever—and it has been very successful—is to give, when first called, a mercurial purge; I then direct quinine—from five to twenty grains, as may be necessary to prevent the paroxysm—to be given at one dose five hours before the expected chill; every morning thereafter, until the patient is considered cured, I direct the lemonade, *à la* Crudeli, to be taken before breakfast. Of course, anæmia, engorgement of the liver and spleen, or any other of the sequelæ of malaria must receive appropriate treatment. The greatest objection I find to the lemon treatment is the difficulty of getting the patients to carry out the directions. They think them too simple to seem to be very important."

TREATMENT OF HECTIC FEVER.

It has been only since the careful bedside observations of Wunderlich that the thermometer has played such an important part in fevers, and the great value of carefully recording the fluctuations of the temperature been fully realized. The treatment of fevers varies to a great extent. Quinine and salicylic acid are old "stand-bys;" then later kairin and thallin came into use; then acetanilide, or the so-called *antifebrin*.

The success which attended the use of these drugs, so far as lowering the temperature was concerned, caused at first, naturally enough, their practical value to be overrated.

Our experience with hectic fevers, such as usually accompany chronic tuberculosis, is even less favorable than with fevers of the typhoid type. Indeed, but a few years ago, no other remedy was thought to be of any avail but quinine. Hydriatic treatment was seldom, if ever, resorted to, on account of the dangerous accompanying and after-symptoms.

The remedy most frequently used in such cases is antipyrin in doses of about 0.5 gramme ($7\frac{1}{2}$ grains) to 1 gramme (15 grains).

PROFESSOR ALFRED PRIBRAM, in an article in the *Prager Med. Wochenschrift* on the treatment of hectic fevers, speaks of his experience with the drug, and states that he has found smaller doses of far greater value.

He considers a long-continued use of antipyrin inadvisable. Under its use the temperature will sometimes fall to subnormal,

and he calls special attention to the fact that the lower the temperature is reduced by full doses of the drug the next rise will be proportionately higher.

Some cases which the writer cites show a rise and fall of over three degrees Centigrade daily.

The author advises the following treatment, which, he contends, will yield the best results:

A tablespoonful of a one per cent. solution of antipyrin contains about 0.15 gramme ($2\frac{1}{4}$ grains) of the drug, and the same amount of a one and one-half per cent. solution contains about 0.23 gramme ($3\frac{1}{4}$ grains). When first trying the effect of antipyrin on hectic fevers one should give about two tablespoonfuls of the one per cent. solution (less for a child or aged person) about half an hour before the fever begins. Then carefully watch the temperature, and note if the rise is less than usual. If the rise is above 38° C., then give another tablespoonful of the solution; and this should be done every hour until the temperature falls below 38° C. Usually two doses will prove sufficient. If the one per cent. solution seems strong enough, it should be continued in the same manner for four or five days; if not, the one and one-half per cent., or even a two per cent., solution may be used in its place. On the sixth or seventh day begin to omit one dose daily, viz., the last one (that is, if you have been giving three doses daily, omit the third dose). The results will usually continue to be the same. Then continue this treatment for a few days longer, then drop another dose, and proceed again in the same manner, keeping meanwhile careful record of the temperature. Soon the remedy may be stopped entirely, without changing the temperature. Continue, however, the observations, as possibly the temperature will rise again, owing to severe coughing, overloading of the stomach, or during menstruation, in which case antipyrin may be commenced again, and given in the same manner as indicated above. The appetite generally increases, and strong nourishment should be given.

Professor Pribram gives numerous cases which show the good results of his method in using the drug.

In those cases which cannot bear even small doses of antipyrin, when its use causes profuse perspiration, or where there is a tendency to hemorrhage, acetanilide (antifebrin) may be used in its place, and in the same manner, with similar results.

ANTIPIRYN AND ANTIFEBRIN IN HAY-FEVER.

DR. W. CHEATHAM, of Louisville, Ky., writes to the *Medical Record*, October 8, 1887, as follows: "This being what is known as 'hay-fever' season, I wish to call the attention of the profession to the use of the above drugs in this affection. I do not remember seeing any article on the subject. I used antipyrin frequently last summer and fall, always with the best results. This summer I have been, and am now, using it in a number of cases, and have been also trying the antifebrin. Mr. B——, foreman in a large railroad repair-shop, has had so-called hay-fever for ten years; the difficulty begins with him in early spring, and ends with cold weather. He has taken, during the whole summer, a daily dose of fifteen grains of antipyrin, which has given him great comfort, relieving him entirely of all the fever symptoms, stimulating him for work, giving him good rest at night, and lessening very much all nose and eye symptoms. I used it last summer in fourteen other cases, with similar results. This summer I have tried the antifebrin in half of my cases. The effect has been about the same as from antipyrin. In a few of the cases some slight depression was complained of, but this is readily corrected by small doses of belladonna or its alkaloid. As I stated before, some of my patients have taken both the antipyrin or antifebrin (more frequently the former) daily—from ten to thirty grains of the former, or from four to six grains of the latter—for several months, with no bad effects. I know it to be of great benefit in hay-fever, and am anxious for others to try it."

THE ACTION OF VERATRINE.

The physiological action of veratrine was investigated many years ago by Prévost in France, Guttmann and Bezold and Hirt in Germany, and Amory and Webber in America. More recently Boehm, Fick, and Rossbach in Germany, and Ringer and Brunton and Cash in England, have added to our knowledge of its influence on the muscles and heart.

For the purpose of confirming or refuting previous observations, LISSAUER, under the direction of Boehm, has carefully re-examined the effects produced by veratrine on various organs, and published his results in the *Arch. f. Exp. Path. u. Pharm.*, xxiii., Heft 1 and 2. We take the following from the analysis of his paper published by Dr. Leech in the

Medical Chronicle for September, 1887: He used in his experiments crystallized veratrine. Its action, he says, does not differ from that of the amorphous veratrine of the German Pharmacopœia, which consists of a mixture of cevadine, a crystallized alkaloid, and veratridin, an amorphous base. Concerning the influence of veratrine on the muscles of cold-blooded animals, Lissauer made no special investigations, because of the general agreement which prevails as to the phenomena observed. He is inclined to think, however, that the motor phenomena produced by veratrine, though chiefly dependent upon its action on the muscle, are also influenced first by stimulation and then by paralysis of the cord. He is thus in accord with Kölliker and Guttmann, but his views are founded rather on inferences from what he has observed in warm-blooded animals than on direct experiment. In the dog, and to a less extent in the rabbit, he saw veratrine produce first an ataxic condition, which, from previous experiments of Rossbach and the character of the motor disturbance which he noted, he attributed to the increased irritability and altered contractility of the muscles caused by veratrine. Afterwards he says he noted a paralytic convulsive stage, and this he considers centric in character. The reasons which he gives for this view, however, are not quite clear and convincing.

On the frog's heart, veratrine, he finds, produces first a decrease of pulse-frequency, then peristaltic movement (*Herzperistaltik*), followed by strong and slow ventricular contractions. In the isolated heart the contractile power of the ventricles as estimated in Williams's apparatus seems at first increased and then decreased. The slowing influence of veratrine is seen when the heart is isolated as well as when it is *in situ*. In his experiments on warm-blooded animals Lissauer was unable to obtain the increased rapidity of heart's action and rise of pressure which Bezold and Hirt state they saw after small doses. He found the pulse slowed and the pressure decreased, though during poisoning by veratrine irregularities in pressure and frequency occur. He thinks it is possible, as Bezold and Hirt affirm, that veratrine stimulates the vagus centre, but the slowing of the heart is chiefly due to the direct influence of the drug on the motor ganglia or muscle; the slowing is not accompanied, when ordinary doses are given, by loss of power of the contraction. Bezold's and Hirt's experiments seem to indicate that veratrine first stimulates

and then paralyzes the vaso-motor centre. Lissauer finds no evidence of stimulation. The most important effect of veratrine is due to its paralyzing influence on the vaso-motor system, but whether this is central or peripheral he is unable to determine. Lissauer finds, like earlier observers, that veratrine produces slowing, temporary intermission, then cessation of respiration; a slight acceleration at first noted is due to the psychical excitement produced by the experiments. Atropine directly antagonizes the action of veratrine on the respiratory centre, and when the two drugs are given together life is longer sustained than when veratrine is given by itself.

RAPID ANÆSTHETIZATION.

In the *New York Medical Gazette* of October 22, DR. J. LEONARD CORNING makes a suggestion, which seems to be based upon sound principles, and may occasionally be of avail in hastening the action of an anæsthetic. Noticing that small men were intoxicated by much less quantities of alcohol than was required for men of great bulk, he conceived the idea of reducing the quantity of blood to be saturated by the anæsthetic, and thereby increasing the intensity of the action of the drug in a certain length of time. In a case of difficult etherization, owing to habits of intoxication, a strong, flat, elastic tourniquet was secured around each of the patient's thighs, so as to arrest both the arterial and venous blood-flow in the same. By this procedure each limb was converted into a receptaculum for a considerable proportion of the total blood-mass, or, as a bystander "put it," "about one-third of the man was cut off," and consequently it was only necessary to saturate the remaining two-thirds (of the total blood-mass). The result was very satisfactory, and after the operation, which was a brief one, when the ligatures were removed, the patient recovered from the effects of the ether instantly. Dr. Corning states that if he has again occasion to test this method of introducing general anæsthesia, he intends to ligate the arms as well as the lower limbs, and place the ligature as near the axilla as possible.

PROPOSED CHEMICAL LUNG TEST.

DR. ZALESKI, of the Dorpat Physiological Institute, has published in the *Vratch* (No. 32) an account of some researches he has been

making with the object of introducing a new lung test, which may be trusted to give satisfactory results in cases where the hydrostatic test is inapplicable or of doubtful value. He suggests that, as at the moment of birth there is not only an influx of air into the lungs, but a very marked increase in the blood circulating through them, and as blood contains iron in a tolerably definite proportion, the quantity of iron found in the lungs should furnish a clue to the question as to whether the child had breathed or not. He examined the lungs of four still-born children and of three children born alive; also those of a healthy man who had been killed by an accident. Having of course taken care that the lungs had not been subjected to any previous section or manipulation, he tied the roots and cut off the bronchi. They were then immersed in distilled water for the hydrostatic test, and, after being dried with filtering paper, they were weighed in a platinum dish, and sections were made and carefully examined. After this they were dried in a hot-air chamber at from 115° to 120° C. until they ceased to lose weight. Soda was added to the dried lung-substance, also water, and the whole was dried in a water-bath. The mass was then ignited in a Bunsen's burner, treated with water, and thrown on a filter, which gave no ash. The whole was then again ignited. Here, all the iron was, of course, not in the filtrate. It was then heated with strong hydrochloric acid in a water-bath. After the hydrochloric acid had evaporated, the residue was treated with sulphuric acid, reduced by zinc, and the iron estimated by a solution of permanganate. The result of the observations showed that the iron contained in the lungs of children that had breathed was always considerably more in proportion to their weight than in the lungs of still-born children. The mean percentage of iron (Fe) in the lungs of the still-born was 0.0110 of the weight of the fresh lung, and 0.0828 of the dried lung; whereas the mean percentage of iron in the lungs of the children who had been born alive was 0.0188 of the weight of the fresh lung, and 0.1182 of that of the dried lung. The iron in the case of the adult was still more than in that of the infants, the percentages being 0.0217 and 0.1266 of the fresh and dried lung-substance respectively. In one case in which the child had lived for five days part of the left lung was found diseased, there being evidences of septic pleuritis and pneumonia. Here the diseased portion of the lung was separately examined, and found

to contain a percentage of 0.0192 of iron in the fresh state, and of 0.1197 in the dry state, so that it would appear that the "iron lung test" holds good even for diseased lungs. The author has not made observations in cases where there has been profuse hemorrhage from the cord, nor in those where putrefaction has commenced, but he thinks it probable that the test would answer here as well as when the lungs have been immersed in spirit. Of course, artificial inflation after death would not vitiate the test, as was indeed proved by one of the cases where Schultze's method of inflation was adopted five hours after still-birth. Dr. Zaleski's "iron lung test" is evidently of too complicated a nature to be carried out by the ordinary practitioner, but in doubtful cases it would be quite practicable to preserve the lungs and send them to an expert, just as the stomach and other viscera are sent in poisoning cases. Before, however, any real value can attach to evidence deduced from it, a large number of experiments must be made by different observers, and their results collated.—*Lancet*, October 15, 1887.

THE USE OF MENTHOL IN TUBERCULAR LARYNGITIS.

At the meeting of the Cincinnati Academy of Medicine, DR. JAMES G. HYNDMAN read a paper (*Cincinnati Lancet-Clinic*, October 8, 1887) on the use of menthol in tubercular laryngitis, a drug which was first used in this connection two years ago by Dr. Rosenberg, of Berlin.

Rosenberg's attention was first directed to this use of menthol by observing the anæsthetic and analgesic influence it exerted upon the nasal and pharyngeal mucous membranes. This led him to its employment in the larynx, especially in the ulcerative stage of tubercular laryngitis, and a very extended experience has shown that it is well borne. The first sensation produced is that of a slight tingling, followed by a pleasant cool feeling. After the first few sprays cough is seldom excited. Rosenberg advises to apply the agent by means of the laryngeal syringe, guided by the mirror. Dr. Hyndman has found the spray apparatus in general use preferable, the force being that of a chamber of compressed air. Attempts at gargling kept up by the patient secure contact of the dissolved menthol with all parts of the diseased tissue of the larynx.

The writer's experience with the use of

this agent is limited to five cases, two of them well advanced, but his results are singularly corroborative of Rosenberg's eighty cases (including some pulmonary patients). In a comparatively short time (from one-half to one week) there was marked subjective improvement, with diminished dysphagia, increased hopefulness, and improved nutrition. The changes in the local processes reported by the author were striking. The ulcerations rapidly lost their dirty gray appearance, and fresh, healthy granulations were set up, resulting, in a time varying from two to ten weeks, in perfect cicatrization. The thickened and infiltrated mucous membrane did not respond until lactic acid applications were made. While the latter possess the advantage of much more rapid action on local ulcerations, they are at the same time far more painful.

In hospital cases it may be possible to follow the directions to make these applications twice a day in the earlier part of the treatment. But in private and dispensary practice it is seldom that we can see our patients oftener than once in twenty-four hours.

The sedative effect of the menthol lessens dysphagia, and thus promotes nutrition, the first application securing comparative ease for several hours, and the next for a still longer time. Finally, one application daily will secure the patient moderate relief. The solutions employed may be either oily or alcoholic, Dr. Hyndman never having found the alcoholic solution to produce pain. In fact, he prefers it to the solution in oil, since the latter requires a troublesome warming of the receptacle, or its application by the syringe. The strength of the solution may vary from five to twenty per cent., fifteen per cent. being well borne. In many of his cases Dr. Hyndman states that a year has elapsed without the development of further tubercular symptoms, though it may be that a sufficient time has not yet passed to enable one to pronounce positively that cures have been effected. Notwithstanding the excellent results which have so early followed the local treatment, and the apparent healing of ulcers and improvement of the general system, it would certainly be the course of wisdom to continue the treatment by inhalations, or very forcible sprays, for a long time, in the hope of exerting the same fatal action upon tubercle-bacilli possibly present in the deeper air-passages. The experiments made by Reichert, of Rostock, consisting of throwing spray of saffron deep into the open tracheæ of living

animals, and then, the animals having been killed, finding the discoloration in the terminal divisions of the air-passages, would seem to show conclusively that good results can be obtained in pulmonary tuberculosis by antiseptic inhalations of sprays. Not only is it theoretically proved, but the narration in the address referred to of a number of apparent cures would seem to place this plan, if not this particular agent, in the first rank.

The theory of the action of menthol is simple. Koch found that *ol. menth. pip.*, of which menthol is the active constituent, prevents further development of anthrax bacilli in the proportion of 1 to 33,000, and kills cholera bacilli 1 to 2000. Experiments made in Koch's laboratory have shown that menthol introduced into pure culture of tubercle-bacilli caused their destruction.

Again, its action on tubercle-bacilli is shown by the experiments of Sormain and Bagnatelli, who mixed one cubic centimetre of tubercular expectoration with the antiseptic (proportion not stated), and watched it for one to two hours at a temperature of 35° to 40° C. (95° to 104° F.). They then injected it, by means of a disinfectant syringe, into guinea-pigs, without any infection resulting.

Our hopes from the use of menthol in this class of cases are founded, therefore, not only upon experimental evidence, scientifically as it has been built up, but also upon a favorable report of its clinical utility based upon a very considerable experience. If it be true, as claimed for it, at the present time there is no other effective antiseptic agent known which can be introduced into the organism in so concentrated a solution, and for so long a period, without risk or danger to the general system, menthol certainly deserves an extended trial.

CHAMPNEYS ON ARTIFICIAL RESPIRATION IN INFANTS.

In a very excellent little monograph on this subject, recently published, DR. CHAMPNEYS, after a number of experiments on infants in whom no attempt at respiration had taken place, arrives at the following conclusions: "Never hurry; it is not a question of seconds, and success depends upon a fine exercise of the judgment. Make a good diagnosis first as to life or death; secondly, as to the stage of asphyxia. If the heart beats ever so slowly and feebly, the infant is not dead. If the heart is not beating death is not certain, unless it can be proved to be inactive for

some time. If the child is livid and not flabby, it will probably come round; wipe out its mouth and pharynx, and rub it with a soft cloth down the spine; press gently on the cardiac region. If this produces no effect, or if it be in the pale stage, inflate the lungs by the mouth and then by Silvester's method. If air enters the lungs, well and good; if not, try Schultze's method, or insert a catheter as described above. On the first sign of muscular action, plunge the child into cold water, or into alternate hot and cold baths. Vary the treatment between occasional inflation of the lungs, artificial respiration, pressure over the cardiac region, baths, irritation down the spine, according to the judgment, remembering what may be expected of each method, and that no one method will suffice for all cases. Watch for signs of resuscitation,—namely, improvement in color, in movements, in cardiac pulsations, as described above. Never be content until the child breathes regularly and appears to be continually improving."—*Medical Press*, October 5, 1887.

WHOOPING-COUGH TREATED BY NASAL INSUFFLATIONS.

In the *British Medical Journal* for October 15, 1887, MR. GEORGE HOLLOWAY gives a brief account of twenty-four cases of whooping-cough treated with insufflations of boric acid, according to the plan first proposed by Dr. T. Guerder, of Paris. Dr. Guerder's treatment is based on the theory that whooping-cough is due to nasal reflex action (of parasitic origin), caused by congestion of the pituitary mucous membrane and nasal catarrh. The congestion of the respiratory tract in this disease always commences in the Schneiderian membrane, and extends from it to the other parts, partly, perhaps, from the multiplication of the germs and partly from the incessant cough, which produces chronic congestion of the mucous membrane of the air-passages. In support of this statement Mr. Holloway states that if the congestion of the Schneiderian membrane be relieved by the application of boric acid, congestion of the other parts disappears also.

As yet no essential germ of this disease has been satisfactorily demonstrated, but from its infectious nature there can be little doubt but that it is due to a specific germ, and Mr. Holloway believes that the favorable results which he has obtained from the use of boric acid are due to its action as a parasiticide. The

method of treatment which he advises is as follows: He confines the patient to one room for one week or ten days, and instructs that each nostril be insufflated every three hours during the day, and once during the night, with from 2 to 3 grains of finely-powdered boric acid. No difference is made in the diet unless there is some special circumstance which calls for it, and at the end of ten days the child may be allowed to go out in favorable weather. The average duration of the twenty-four cases which Mr. Holloway reports seems to have been about three weeks,—a great reduction in the usual duration of the disease.

HYDRASTINE AND BERBERINE.

PROFESSOR SCHMIDT publishes some further information respecting the remarkable resemblance of hydrastine to narcotine in its behavior to oxidizing agents. Last year (*Pharm. Journ.*, 3, xvii. 427) Messrs. Freund and Will stated that upon treating hydrastine in acid solution with oxidizing agents it splits up into opianic acid, and a base closely resembling cotarnine, which appears to have been since named hydrastine. Professor Schmidt now states that if the oxidation be effected in alkaline solution the decomposition goes further, the products being hemipinic and nicotinic acids. Notwithstanding this complete correspondence in behavior, all attempts to convert hydrastine into narcotine, or *vice versa*, have hitherto failed. It is further affirmed by Professor Schmidt that, although hydrastine crystallizes from acetic ether in very large crystals, it does not form any well-crystallized salts except the picrate, the salts being usually of syrupy consistence, drying up to a horny substance of inconstant composition. He, therefore, infers that the commercial salts of hydrastine are not of constant composition, and probably are mostly basic compounds.

With berberine and its salts the conditions are exactly reversed, the alkaloid being difficult to obtain in a crystalline form, while its salts are really crystallizable. On this ground Professor Schmidt questions the character of the substances described in price-lists as "berberinum purum," which he is reported to have stated always contains chlorine (*Pharm. Zeit.*, September 24, p. 542). He says that berberine has a remarkable power of combining with solvents, such as alcohol, ether, chloroform, and acetone, to form crystalline compounds. Thus, berberine and chloroform, in the proportion of one molecule of each, form a beau-

tiful crystalline body, which is not a simple addition product, since it is permanent at 100° C., and by acids is decomposed, not simply into berberine and chloroform, but decomposition products of the latter. Berberine can also combine with a second molecule of chloroform, but this behaves like water of crystallization.—*Pharmaceutical Journal and Transactions*, October 1, 1887.

REMARKABLE CASE OF ANTIFEBRIN-POISONING.

The following extract is from a letter addressed to the *Deutsche Medicinal-Zeitung* by DR. DOLL, of Berlin:

"The extensive uses of antifebrin in the practice of medicine, and its universal employment for neuralgia, toothache, headache, and the like, compels me to bring the following case of antifebrin-poisoning (the only one to my knowledge) before the profession:

"Mrs. D., who suffered from nervous headache, advised by an article in the *Berliner Lokalanzeiger*, purchased twenty-five pfennigs' (about six cents) worth of antifebrin, and put the entire quantity in two portions, which she drank in close succession.

"In about three hours vomiting began, and a cold sweat broke out all over the body, and the patient sank into a deep faint.

"Several hours subsequently I was called in, and found the face, ears, chest, hands, and feet as cold as ice, and covered with a cold sweat; the abdomen was warm but moist; the face deathly pale; eyelids closed, but when spoken to she would open her eyes; pupils moderately dilated, and showing but little sensitiveness to the light; heart beating violently; respiration rapid; pain in abdomen; nausea, with occasional retching, but no vomiting.

"The nervous system was in a most strange condition, for, although the woman lay perfectly unconscious of her surroundings, yet she was able to answer to all my questions promptly and sensibly, although only in a weak voice.

"She said that she felt as though she were continually falling, and that she felt perfectly numb.

"In the morning, after the continued use of strong excitants during the night, consciousness returned, accompanied by a most profuse perspiration. At nine o'clock the temperature was normal; the pulse was still up to 108. The whole abdomen was sore and painful. Strange to say, the patient remem-

bered nothing of her condition the night before, and did not even recall the presence of the doctor. This seems to show that antifebrin produces an effect on the nerves similar to an hypnotic state, in which the patient can be made to answer questions and obey commands without having any self-consciousness.

"The next day the patient showed a marked loss of appetite; the face was flushed, and she complained of a severe headache. The symptoms of the poisoning had disappeared." It is unfortunate that the quantity of the drug taken was not more clearly indicated.

A NEW METHOD OF TREATING THE VOMITING OF PREGNANCY.

Notes of three cases published by DR. WILLIAM DUNCAN in the *Lancet* for October 15, 1887, would appear to indicate a method which in many cases will appear to produce the most marked success in overcoming the vomiting of pregnancy. Dr. Duncan found in a number of cases which he examined that the vomiting of pregnancy was accompanied by some affection of the uterus and tenderness about the cervix and vagina. He employed a fifteen per cent. solution of cocaine in such cases, painting it freely on the vaginal roof and cervix, and in some instances inserting a probe covered with cotton-wool and soaked in the solution into the cervical canal. It would appear that the *modus operandi* of the cocaine would be to remove the morbidly hyperæsthetic condition of that portion of the uterus above the internal os, which is supposed to exist in these cases. Dr. Duncan claims that to obtain the full effect of the cocaine it must be applied to the cervical canal, and herein lies the danger, for a careless or unskilful application might readily produce abortion. Dr. Duncan, however, states that he has made a number of such applications to the cervical canal during gestation without terminating the pregnancy in a single instance.

ACETPHENETIDIN AS AN ANTIPYRETIC.

Acetphenetidin is a combination of acetyl with phenetidin, and is a base of analogous composition with acetanilide (antifebrin).

DR. G. KOBLER, in the *Wiener Med. Wochenschrift*, speaks of it as an antipyretic. He says that although a healthy man will not be affected by doses of 0.5 to 0.7 gramme ($7\frac{1}{2}$ to $10\frac{1}{2}$ grs.), yet in fever patients 0.3 to 0.4

gramme will be found to reduce the temperature to a marked degree. Dr. Kobler cites fifty fever cases in which the drug was successfully used, among which were cases of tuberculosis pulmonalis, pneumonia crouposa, typhus abdominalis, sepsis puerperalis, pleuritis, and meningitis cerebro-spinalis. He states that in adults doses of 0.6 to 0.7 gramme, and in children 0.2 to 0.3, proved sufficient.

The drug begins to act in about four hours, and will keep the temperature down from two to three hours at the longest; then the temperature will slowly rise about 0.2° C. The influence of the drug seems to be lost in about eight hours.

According to Dr. Kobler there are no disagreeable symptoms accompanying the use of acetphenetidin, neither is the rise of temperature accompanied by sweating or the fall by chills. Cyanosis and collapse were not observed. Out of ten cases of pneumonia treated with the drug, six terminated fatally on the fifth and sixth days. In one case of pneumonia in a patient also affected with Bright's disease acetphenetidin was given in doses of 0.7 to 1.6 grammes without any signs of intoxication.

The drug seemed to have no injurious effect on the diseased kidneys. In the beginning of the disease there had been a good deal of blood in the urine, which, however, grew less under the use of acetphenetidin.

ADONIS ÆSTIVALIS.

This plant has been examined by Italian doctors as to its therapeutic value, and Albertoni reports in its favor. His experiments were made on animals and sick and healthy people. In cases of insufficiency of heart-action, with feeble, irregular, rapid pulse, diminished arterial pressure, dyspnoea, and diminished excretion of urine, the administration of the plant in substance produced, in a few days, the return of normal pulse, increase of the pressure of the blood, and disappearance of the respiratory oppression. The quantity of urine increased from eight hundred to three thousand cubic centimetres in a day. These good results were not obtained in cases in which the organs susceptible to the influence of adonis, such as the kidney epithelium, muscular fibre, and the nerve apparatus of the heart had already retrograded to too great an extent. The dose is 4 to 8 grains a day, given in substance or infusion. The effects manifest themselves about the third day.—*Pharmaceutical Record*, October 15, 1887.

GASEOUS RECTAL INJECTIONS AND THE GLYCOGENIC FUNCTION OF THE LIVER.

MM. ARNOZAN and FERRÉ, of Bordeaux, communicated to the Toulouse Congress an interesting observation they had made with reference to gaseous rectal injections tending to show that sulphuretted hydrogen introduced into the animal economy in this manner arrests the glycogenic function of the liver. Three rabbits which had been subjected to these injections died, two of them in a short time, the third after a rapid and progressive emaciation. In all three the liver-tissue was found to contain no sugar whatever.—*Lancet*, October 8, 1887.

HÆMATEMESIS.

The stomach of a patient suffering with hæmatemesis is always extremely sensitive. A mere drop of water or medicine, or a drop of blood from the wound, will cause burning and symptoms of vomiting. It is, therefore, very difficult to give any medicine to the patient. Their spirits are also always depressed, as even talking and the swallowing of saliva will irritate the stomach.

DR. GEYZA DULÁCSKA gives an account of ten severe cases in the *Pester Med.-Chir. Presse*:

CASE I.—Varix of the œsophagus; hæmatemesis; death.

CASE II.—Ulcer of the stomach during pregnancy; vomiting of blood after birth; recovery.

CASE III.—Ulcer of the stomach; vomiting of blood; recovery.

CASE IV.—Hæmatemesis during hypertrophy of liver.

CASE V.—Adenoid degeneration of the liver; recovery after long and frequently recurring hæmatemesis.

CASE VI.—Man, aged 62, with amyloid degeneration of liver and spleen, who, when lifting a heavy weight, suddenly became ill, and began to vomit blood.

CASES VIII., IX., and X.—Vomiting of blood in connection with heart-affections.

Dr. Dulácska says that in internal hemorrhages astringents are useless, and the only hope of recovery lies in coagulation or the stopping up of the bleeding vessels.

In rupture of the spleen rapid coagulation often checks the hemorrhage, and makes recovery a possibility. Indeed, even in the rupture of abdominal aneurism, coagulation

will sometimes keep life a whole week, when immediate death was looked for.

The arrest of the hemorrhage depends on the formation of a thrombus.

The doctor's remedies are rest, ice, and ergotin. The first day the patient should neither eat nor drink, so as to give the stomach perfect rest. On the second day, iced milk in small quantities may be given. Absolute rest must be had, as any movement is liable to cause irritation of the stomach. The patient must not be allowed to speak. Small pieces of ice may be put in the mouth, but the ice-water must not be swallowed. Washing out of the mouth with ice-water will quench thirst. On the fourth or fifth day meat may be given. Ice-bags may be placed over the stomach, but they are not of any great value, and frequently the patient cannot bear their weight.

By means of ergotin the pulse may be reduced 10 to 15 to 36 beats, and the smaller arteries contract themselves, and the frequency of the respirations will be less. It must not be given by the mouth, but as an injection in a ten to twenty per cent. solution.

THE URINE IN TABES DORSALIS.

The following facts are set forth by MM. LIVON and ALEZAIS as the result of a series of researches on the urine of patients affected with an apyrexial disease of the cord,—namely, tabes dorsalis: A tendency to diminution of the urea eliminated in the twenty-four hours; a diminution in the total daily discharge of phosphoric acid, with a tendency to proportional augmentation of the discharge of earthy phosphates; a great variation in the elimination of chlorine, with a bias in favor of hyperchloruria. Intravenous injections of tabetic urines appear to be sufficiently toxic in their action, since it has been found that from twelve to twenty-four cubic centimetres of urine per kilogramme of body weight of animals was sufficient to kill dogs.—*Lancet*, October 15, 1887.

SCOPOLIA ALKALOIDS.

It will be remembered that some time since Professor Eykman announced that he had separated from Japanese belladonna-root (*Scopolia japonica*) an alkaloid resembling atropine, which he named "scopoleine," and under that designation a brown syrup has since been supplied in commerce as a mydriatic alkaloid.

According to PROFESSOR SCHMIDT, of Marburg, however, the scopolia-root contains no new alkaloid; but atropine, hyoscyamine, and hyoscyne occur in the root in varying proportions, so as to suggest that the conditions of growth and the time of collection essentially influence the relative quantities of the alkaloids. Professor Schmidt is even inclined to think that under certain conditions these three alkaloids may be converted one into another in the plant, and in support of this he recalls Professor Ladenburg's statement that when tropine and tropic acid, derived from the decomposition of hyoscyamine, are recombined, the product is not the original alkaloid, but its isomer atropine. Hyoscyamine was also found in the root of a cultivated species, *Scopolia Hartnackiana*, and both roots yielded "scopoletin," a fluorescent compound, identical with the methyl esculetin occurring in belladonna-root. Professor Schmidt also disputes the basic character of the substance hitherto known as "rotoine," which he thinks is more likely a compound of alkali, with a fatty acid very rich in carbon,—a soap, in fact,—and ought, therefore, to be struck off from the list of alkaloids.—*Pharmaceutical Journal and Transactions*, October 1, 1887.

IODOFORM AS AN ANTISEPTIC AND ANTIPARASITIC.

The following abstracts are taken from the *Centralblatt für Chirurgie*, September 10. The "iodoform question" is one of great interest to all surgeons, and should be definitely settled. We hope that these rather contradictory views will stimulate experimenters on this side of the water, and that we shall be able to publish the result of their observations.

KÖNIG, in the *Therapeutische Monatshefte* for April, 1887, gives an interesting account of his experiments. His conclusions are based on years of careful observations, and he considers iodoform of great value as a dressing for wounds. He states that it has little or no bacteria-killing properties, and also that it is not a specific against tuberculosis, as it does not hinder the formation of tubercle-bacillus. The only effect it has on a healthy wound is to dry it up more or less and to promote healing, and it also renders the surface of the wound proof against the further growth of bacteria. Other remedies can ably take the place of iodoform.

C. BING also agrees with König as to the "drying properties" of iodoform. He experi-

mented with iodoform dissolved in the oil of almonds on the mesenterium of a frog, and found that it checked to a great degree the extravasation of the colorless blood-corpuscles.

According to his views, the drops of fat on the surface of the wound dissolve the iodoform sufficiently to cause it to act as "iodoformized oil." It is the iodine in vapor form that checks the exit of the colorless corpuscles from the vessels (*Therapeutische Monatshefte*, May, 1887).

G. DE RUYTER, in the *Archiv für Klin. Chirurgie*, vol. xxxv., Part 1, gives the results of a long series of experiments, partly conducted in the Hygienic Institute and partly in the Imperial University clinics of Berlin.

He speaks of iodoform as "a protective filter which guards against the approach of bacteria." On surfaces where they already exist the iodoform will cause their formation to be more gradual.

The bacillus of green pus and the micrococcus prodigiosus remain unchanged by iodoform.

In contradiction to this, however, it has been shown that the drug does in a measure check their formation and may sometimes render them harmless.

Ruyter says that of still greater importance are the *solutions* of iodoform. A solution of ether (two parts), alcohol (eight parts), and iodoform (one part) is a superb antiseptic. In the above solution, after standing for six weeks, the author found one per cent. of free iodine. This solution not only checks the formation, but also kills the bacteria.

In healthy wounds which had been disinfected with the ether-alcoholic solution of the drug, the bacteria when introduced into the wound died in one and a half minutes; in wounds where they already existed the solution acted slower, as the bacteria lived for two to three days. His results prove that this solution of iodoform has a right to be classed among the leading disinfectants.

DR. H. SATTLER (Prague) writes of a long list of experiments with iodoform and iodol (*Fortschritte der Medicin*, vol. v., 1887).

The friends of iodoform cannot be grateful enough for the publication of his results. He confidently states that the question is not whether iodoform is an antiseptic; that has been proved beyond all doubt. The only question is as to how it acts on the tissues and secretions and micro-organisms. His results are similar to De Ruyter's, and he further states that only those micro-organisms

which come in direct contact with the drug are affected by it ; those at a distance remaining unaffected. This accounts for the contradictory results of various experimenters.

The author concludes by saying that, on account of its sure effect and non-irritant properties, iodoform occupies a place among antiseptics which cannot be taken by any other drug.

The same applies to iodol. It is as active an antiseptic as iodoform. He prefers powdered iodoform to iodol on wounds, as the latter slightly irritates them.

The author considers iodol-vaseline of far greater value than iodoform-vaseline, although the former may cause slight burning to the sensitive parts.

BAUMGARTEN, in a lecture delivered before the Medical Society of Königsberg, denies the antiparasitic properties of iodoform (*Berlin. Klin. Wochenschrift*, No. 20, 1887).

Having injected some tubercle-bacilli into the trachea, a tubercular knot formed where the injection had been made, although the canula had been inserted through a thick and wide plaster of iodoform which covered the spot. When, however, the canula was inserted and withdrawn through a wad of cotton which had been soaked in a one per cent. solution of corrosive sublimate, no infection of the puncture took place.

Again, small flakes containing the bacilli were well mixed with ten to forty times their quantity of iodoform. This mixture was then introduced into the subcutaneous cellular tissue of rabbits and guinea-pigs. In every case the micro-organisms grew quickly in connection with the iodoform.

In the same manner Kunze made a series of experiments, all of which resulted unfavorably for iodoform.

THORKILD ROVSING (Copenhagen), in the *Fortschritte der Medicin*, vol. v., 1887, has endeavored to answer the question, Has iodoform any anti-tuberculous properties?

He draws the following conclusions from his experiments on the eyes of rabbits with "pure tubercle" and "tubercle treated with iodoform":

1. Iodoform has no effect on the life of the bacillus, whether in the body or in living tissue or under the influence of light.

2. Iodoform acts as an irritant on the tissues, and thus makes the surface more favorable for the growth of the bacillus.

The experiments of Rovsing were not very extensive, and so—after reading the results of other authorities, such as De Ruyter—it

would be well not to draw any too positive conclusions from the above.

P. BRUNS and WANWERK (in the *Mittheilungen aus der Chirurg. Klin. zu Tübingen*, vol. iii., Part I., 1887) went through a series of experiments with iodoform on abscesses. They worked with the microtome and microscope, and their results are highly gratifying. They describe the action of iodoform histologically as follows:

"The spindle-shaped cells grow rapidly, and a healthy, highly vascular, granulating tissue forms, which gradually lifts off the tuberculosed and necrosed parts. After the disappearance of the bacilli the vessels become obliterated, and the granulations either disappear or else are changed into connective tissue with the spindle-cells; exudation ceases; the contents of the abscess are absorbed, and the walls shrink together and cicatrize.

A. LÜBBERT (Dresden), in the *Fortschritte der Medicin*, vol. v., 1887, writes of forty-three experiments on animals, and comes to the conclusion that iodoform has no effect on the growth of the staphylococcus.

If iodoform is being used a second infection is more difficult, on account of the drying properties of the drug.

We need go no further into Lübbert's experiments, except to say that his results are in exact opposition to those of Sattler.

A POWERFUL DEODORIZER FOR IODOFORM.

Oil of turpentine is a powerful deodorizer for iodoform. A little rubbed on the hands will completely remove the smell from them. The hands should be afterwards washed in soap and water. In the same manner spoons and any utensil may be freed from the smell of iodoform.—*Le Progrès*, Geneva, August 20, 1887.

A CASE OF IODOL-POISONING.

PALLIN writes of a case of iodol-poisoning in the *Hygeia* (Swedish) for May, 1887:

The patient, a man aged 20, was suffering from necrosis of the clavicle. In the evening of the same day the patient became dizzy and violent, and tried to tear off the bandage. The next day the temperature was up to 39° C., and the pulse 136, small and irregular; vomiting and apathy. Albumen and a small quantity of iodine was traced in the urine. Although the dressing was at once changed,

the iodol washed away and bismuth substituted, the symptoms of poisoning remained for four days, and iodine could be traced in the urine for two weeks.—C. Lanenstein, in the *Centralblatt für Chirurgie*.

DIOXYNAPHTHALENE.

The search for new remedies among the carbon compounds does not at present show any sign of relaxation, and one of the latest to be credited with useful therapeutic properties is dioxynaphthalene, $C_{10}H_6(OH)_2$. There are at least six compounds known that have the composition of dioxynaphthalene, or, as it is sometimes written, dihydroxynaphthalene, but the melting-point mentioned ($186^\circ C.$) is that of one prepared by fusing naphthalene disulphonic acid with potassic hydrate. According to DR. LÉPINE (*Archives de Pharm.*, September 5, p. 403), this compound, administered to asthenic persons in 25-centigramme doses, with a maximum daily dose of 1 gramme, has a remarkable effect in imparting energy, though without augmenting reflex action or increasing muscular power. Large quantities, however, appeared sometimes to produce weakening effects, and in two cases cyanosis followed the administration of one gramme. As the hydroxyl group has been credited with the property of augmenting the energy of a radical with which it may combine, and since the formula of dioxynaphthalene differs from naphthol ($C_{10}H_7HO$) in containing another HO group, Dr. Lépine was induced to experiment as to whether there might be any analogy in the physiological action of the compounds. His results were affirmative, and Dr. Lépine says that β -naphthol is capable of producing the same asthenic effects as dioxynaphthalene, but the dose required (2 or 3 grammes) causes irritation to the digestive and other organs.—*Pharmaceutical Journal and Transactions*, October 1, 1887.

THE USES OF NITRO-GLYCERIN.

The value of nitro-glycerin in medicine is now greatly appreciated. It is, however, important that we should be thoroughly acquainted with its properties. Its action in dilating the arteries is of great value, since it not only affects the large and also smaller arteries, but also the capillaries. We might regard its actions in a twofold light: first, it enlarges the arteries which have been con-

tracted, and so transfuses the blood into these almost bloodless vessels; second, in doing so it relieves those vessels which have been surcharged with blood, and thus its action might be compared with that of bleeding.

Nitro-glycerin is useful in angina pectoris, neuralgias, and the like; also in sea-sickness, fainting fits, palpitation, etc. As these ailments all occur in paroxysms, the object in using the drug is to give immediate relief. Its continued use will be found of service in Bright's disease, fatty degeneration of the heart, etc., and in all similar ailments where symptoms of an irregular distribution of the blood are apparent.

DR. TRUSSEWITSCH, in an article on the subject in the *Centralblatt für die gesammte Therapie*, says that the best way to judge the size of the proper dose is by carefully watching its effect on the pulse. He states that the more contracted the radial artery is the sooner it will dilate under the drug, and the accompanying effects will be good; the fuller the pulse the less effect nitro-glycerin seems to have, and the weaker and more yielding the pulse the easier it will be to cause an undue and general effect on the whole organism.

Therefore, in cases of the first-mentioned kind, normal doses (that is, not more than 1 drop of a one per cent. solution) will be all that is needed. In the second kind one may give even as much as 2 drops with safety, not however, without first having tried the effect of the normal dose. In cases of the third kind only $\frac{1}{4}$ or $\frac{1}{2}$ drop may be given at first, so as to avert the disagreeable symptoms which might be caused by a "hyperdosis."

These rules, of course, apply only to those who have not been using the drug habitually, and in weak, nervous, poor-blooded, and timid patients it is always advisable to begin with very small doses.

Dr. Trussewitsch further says that organic heart-trouble does not by any means contraindicate its use, he having used it with good results in angina pectoris, which was complicated by valvular trouble and dilatation of the aorta; also in cases where the heart was enlarged.

The greatest caution, however, must be taken when giving the drug where there is general atheromatosis of the arteries.

Under no circumstances should the dose ever be increased above 2 drops of the one per cent. solution, and even in angina pectoris the increase of dose must be very gradual. If in long-standing cases one begins to find even the increased dose losing its effect, it

will be well to discontinue its use for two weeks or so, at the end of which time the normal dose will be found to have its original effect again. This peculiarity of nitro-glycerin is of great importance, since, even when its use becomes habitual, any undue increase of dose will be found unnecessary.

The best methods for administering the drug are either to drop the solution on the tongue by means of a pipette, or else to have it put up in small tablets of chocolate. The practice of giving it in water is not advised, as it gives bad therapeutic results.

The author also finds that it combines well with other remedies. In combination with digitalis it acts well on patients with weak and irregular heart-action, with cocaine or morphine for neuralgia, and sometimes even with nitrite of amyl in angina pectoris.

The drug should be perfectly pure, as when it is poorly prepared it is utterly worthless.

THE TREATMENT OF DIPHTHERIA.

DR. AD. DUMAS, in the *Bulletin général de Therap.*, says that there is no remedy for fully-developed diphtheria, and therefore it is necessary to check the disease in its infancy.

When healthy children are living near others suffering from diphtheria, they are naturally in danger of contracting it themselves. Therefore the greatest watchfulness is necessary, so as to be able to cope with the enemy at his first appearance.

Dr. Dumas states that he considers it advisable to treat a child antiseptically even before there is any appearance of the disease.

He advises a one per cent. solution of kalium iodide with 8 drops of tincture of iodine to be given daily; also in the night, disturbing as little as possible the sleep of the child.

This treatment should be continued for about a week.

True, the writer's experience is limited, he having based his conclusions as to the value of this preventive upon the observation of only nine cases.

PULSATILLA.

As pulsatilla contains a sharp, active principle which is lost when dried, it is necessary to use only fresh roots in preparing the drug.

The roots also are more active than the leaves.

M. S. VIGIER says that the only useful preparation is the so-called "alcoholative" (1 to 1000 alcohol, 90°). The nauseous taste and smell of the above are greatly reduced by using the following formula:

R Syr. fol. naphæ, 95 grms.;
Alcoh. rad. anem. rec., 5. M.
S.—1 to 3 teaspoonfuls daily in water.

The distillate of anemonin water or any solution of anemonin is very sharp and active. After some time, however, it loses its sharpness and disagreeable odor, and precipitates white leaf-like crystals of anemonin, which are tasteless and odorless.

The formula $C_{16}H_{12}O_6$ has taken up an equivalent of O, and has changed into anemononic acid.

Vigier says it should not be considered poisonous, himself having frequently taken 1 gm. (15 grs.) without effect.

He gives the following formulæ as the best in using anemonin:

R Anemonin, .01;
Sacchar., .09.

For 1 powder, to be taken two to four times daily.

Or

R Anemonin, .01;
Pulv. liquid., .02;
Syrup., q. s.

For 1 pill, to be taken two to four times daily.

The above formulas have also strong anti-catarrhal properties.

ANTIPYRIN AS A NERVINE.

The value of antipyrin in nervous diseases is beginning to be widely acknowledged. Demme, in many experiments upon animals, saw its marked effect both on the muscular and vasomotor nerve-centres. Further researches of other practitioners show various results. Thus, F. Müller (*Centrab. für Klin. Med.*), when using it as an antipyretic, observed sleepiness and incontinence of urine to be caused by it; May (*Deutsche Med. Wochenschrift*) observed vomiting, sweating, and numbness; Kaatzer (*Deutsche Med. Wochenschrift*), exanthema and sleepiness; and Steinacker also speaks of its sleep-producing properties. Ungar gave antipyrin with good results to a patient suffering with hemicrania in doses of 1 gramme (15 grs.), although he said its actions were not always certain. Many other

writers speak of its good effects in nervous headaches. Robinson advises its use in doses of about 1.32 gramme (20 grs.) in Vichy water, and this dose to be repeated in two hours if the pain has not increased.

DR. OTTO SEIFERT, in the *Centralblatt für die Klinische Medizin*, says that his observations with antipyrin in hemicrania were not very favorable. He cites two cases. First, one of a woman, aged 24, who was subject to frequent and severe attacks. These he completely checked three times with 1 gramme (15 grs.) doses of antipyrin, but at the fourth time gastric irritation became apparent, and he was forced to discontinue its use. The second case was that of a woman, aged 21, who suffered from attacks of hemicrania, which came on every two or three weeks. All other remedies, such as quinine, caffeine, etc., had been tried without avail. After a single dose of antipyrin disagreeable symptoms at once began to manifest themselves,—great pain in all the limbs, dizziness, headache, etc.,—so that, indeed, the effects of the drug were more painful than the disease itself. Antifebrin, on the other hand, was given with very good results and without any disagreeable accompanying symptoms.

It would therefore appear that, whether or not fever exists, antipyrin is oftener accompanied with unpleasant symptoms than antifebrin. It is, however, especially noticeable in fever-patients.

Antipyrin has been prescribed in neuralgia of the trigeminus by Drs. G. Sée and Mendel. The results of Dr. Seifert here were more satisfactory than in hemicrania. In three cases of supraorbital neuralgia, doses of 1 gramme (15 grs.) caused complete disappearance of pain in an hour, and its continued use for several days resulted in recovery. There were no disagreeable symptoms accompanying its use.

Dr. Seifert also speaks of its efficiency in allaying the pain of tumors of the brain and several other cerebral affections; also in heart-troubles, such as stenocardia, aneurisms, angina pectoris, etc., although in such cases antifebrin can always ably take its place. Mendel also speaks of its value in epilepsy and in several painful affections of hysterical patients.

Whether antifebrin, on account of its cheapness, and the lesser number of its accompanying symptoms, will take the place of antipyrin in nervous diseases, will soon be settled, as at present the subject is being largely discussed in all the leading medical journals.

ARBUTIN.

Arbutin is a specific body, which is found in the residue of the *fol. uva. ursi*. It is a glucoside, and is contained in the leaves in connection with gallic and other acids. When heated with dilute sulphuric acid it is split into the glucoside, and sugar on the one hand and hydrochinon and methyl hydrochinon on the other hand. Both of the aromatic products are very active, signs of poisoning appearing in animals after doses of 1 gramme (15 grs.) of hydrochinon.

When introduced into the stomach, arbutin is divided into the minutest particles, but is found unchanged and almost in its entire quantity in the urine. A pupil of Kunkel took 9 grammes of arbutin without any unpleasant effect, but the drug was easily traced in the urine. It seems that the drug is almost completely thrown off with the urine.

The percentage of arbutin in the dry leaf is about five per cent.—J. KUNKEL, "Ueber das Arbutin," *Centralb. für die Klin. Med.*

DAPHNANDRA REPANDULA.

A Queensland plant recently examined by DR. BANCROFT is *Daphnandra repandula*. The bark of the tree has a transient bitter taste, and when first removed from the tree it has a yellow color on the inner surface, which changes to metallic black on exposure to the air, but becomes yellow again when dry. Infusions of the bark are of a yellow color, and remain free from microscopic organisms when kept. The extract of the bark does not appear to contain either gum or resin, but is rich in alkaloids. The extract is very poisonous, 1 grain being a fatal dose for a frog, and 10 for warm-blooded animals. The alkaloids contained in the bark are colorless when pure and crystalline. The active one is easily separated from the others, being soluble in water. Its poisonous action is chiefly due to its action on the heart. To some extent it is antagonistic to strychnine. The poison powerfully affects fish, mollusks, and infusoria. When applied topically to voluntary or involuntary muscles it paralyzes them rapidly. Dr. Bancroft has remarked that it also retards the development of septic organisms and that it will deodorize putrid meat. It checks the growth of yeast and kills some water-plants. Another species, *D. micrantha*, which is a shrub and also grows near Brisbane, possesses a similarly active principle.—*Pharm. Journ. and Trans.*, October 1, 1887.

THE TREATMENT OF CARBUNCLE BY INSERTING BARS OF CAUSTIC CHLORIDE OF ZINC.

At the meeting of the Société de Médecine of Paris, on June 11, M. POLAILLON (*London Med. Record*, October 15, 1887) made an interesting communication on the treatment of carbuncle by the insertion of bars of caustic chloride of zinc. M. Polaillon bases his treatment on the fact that carbuncle is caused by a microbe, and that incision by a bistoury is sometimes dangerous, as liable to open out numerous roads to inoculation and septicæmia. When the inflammation does not give way to simple treatment by baths and emollients, it is generally necessary to have recourse to the bistoury, or, better still, the thermo-cautery, which presents less danger; but M. Polaillon prefers employing caustics, which entirely destroy the germs in the purulent focus. For that purpose he chooses Canquoin paste, chloride of zinc, in the form of sticks or bars, hardened by desiccation in a furnace. When the carbuncle is suppurating, and when the skin is perforated at several points, he introduces through these apertures bars of caustic, thrusting them easily down into the focus, so as to fill it with these bars. At the end of a few hours the focus forms one solid mass, separated from the healthy tissue by a zone of cauterized tissue; and in a few days the eschar is eliminated, leaving in its place a granulating surface, which rapidly heals. When the focus is beginning to form, and shows itself only by some white spots on the surface of the skin, he makes a sufficient number of openings with the bistoury or the thermo-cauterizer to introduce the bars of caustic, and proceeds as above. When the carbuncle is only in its first stage, and there is no suppuration and but little fever, M. Polaillon simply applies emollients until the affection has progressed sufficiently for him to apply the caustic bars. But if the carbuncle is accompanied by intense febrile symptoms, if it is voluminous, he does not hesitate to treat it at once with bars of Canquoin paste. In all cases he covers the surface of the carbuncle with a thick layer of compresses, soaked in a carbolic-acid solution, or, better still, with a solution of sublimate at one per one thousand, which he prefers. He applies a linseed-meal poultice, made with the solution of sublimate, and thus obtains the antiseptic effect of the sublimate and the emollient effect of the poultice. This treatment is rather painful for two or three hours, but has the advantage of at once transforming a serious infectious dis-

ease into a simple wound. The results obtained by M. Polaillon with this treatment of carbuncle were excellent. Out of forty-eight cases brought to him, he had forty-seven cures and one death. This was a man of 48 years of age, highly glycosuric, and who had already been very irregularly treated at home during a month. He had an immense carbuncle in the back, and notwithstanding every care and energetic antiseptic treatment, diffuse inflammation carried him off one week after entering the hospital. The average duration of this treatment is twenty-one days only.

TERPINHYDRATE AND TERPINOL.

RABOW (*Therapeutische Monatshefte*, August, 1887) has not yet been able to form a definite opinion on the value of terpin and terpinol as remedial agents, but he gives a good account of these drugs and a *résumé* of the latest experience as to their utility.

If ol. terebinth. and water are left to stand for some time, crystalline needles occasionally form on the walls of the vessel. They consist of terpin, or, more correctly, of terpin-dihydrate, $C_{10}H_{16} \cdot 2H_2O + H_2O$. A monohydrate, $C_{10}H_{16}H_2O$, is obtained from French turpentine oil; this is a colorless oily fluid.

According to B. Fischer, *Neuere Arzneimittel*, p. 137, terpinhydrate is prepared in the following manner: A mixture of four parts rectified oil of turpentine, three parts alcohol (80° C.), and one part nitric acid is left to stand for a few days in a large flat porcelain dish; the crystals collected in the fluid are then taken out and left to dry; they are then pressed between filter-paper and recrystallized out of a ninety-five per cent. solution of alcohol.

Terpinhydrate forms rather large rhombic crystals; they are colorless and odorless, and have a faintly-aromatic taste. It is with difficulty soluble in cold water and turpentine oil, and more easily in hot water, alcohol, ether, and carburetted hydrogen.

The advantageous results obtained from turpentine in lung- and kidney-affections, by Lépine, Sée, Masius, and Ferreira, have already been recorded in the *Medical Chronicle*, October, 1885, and January and July, 1887. Rabow (as quoted by the *Medical Chronicle* for October, 1887) gives the following formulæ for the administration of the drug,

which may be prescribed either in pills or solution :

R Terpini hydratis, gr. xlv ;
Sacch. alb.,
Mucil. gum arab., q. s. M.
F. pil. No. 30.
S.—1 pill three times daily.

R Terpin. hydr., gr. cl ;
Spir. vin., ℥v ;
Aq. destill., ℥iii. M.
S.—1 tablespoonful t. d.

R Terpin. hydr., ℥ii ;
Glycerin (at 30° C.),
Sp. vin. (at 95° C.),
Syr. simpl., aa ℥iiss.

Terpinol is a colorless oily fluid, which is produced when terpin is boiled with diluted mineral acids. It is insoluble in water. It is a stimulant to the bronchial mucous membrane, the secretion of which it renders less viscid. When taken internally it is excreted by the lungs. It does not disturb the stomach unless given in large and long-continued doses. It has been recommended as an expectorant in lung-diseases, and, according to Morra, is more effectual than terpin. It has no visible effect on the kidneys and the nervous system. It may be given in pills or capsules, or it may be injected into the rectum.

Dr. Lazarus, of Berlin, considers pills the best form of administration. 20 to 30 grains can be given daily in this form without discomfort. He believes that only in such full doses can the therapeutic influence of the drug be relied upon. It is useful, he says, when the bronchial mucous membrane is much irritated and the secretion is small and tenacious. This condition is not infrequent in chronic catarrh, in emphysematous and phthisical patients. The secretion is increased, and becomes more fluid ; the irritation correspondingly diminished. In a week or a fortnight the catarrhal symptoms usually disappear.

Haussmann, of Merau, does not report quite so favorably, but finds that the patients bear terpin much better than turpentine. The dose is from 2 to 15 minims. Whether terpinol and terpin are as useful in diphtheria and whooping-cough as turpentine oil, Rabow says, has not yet been ascertained. The terpin is to be dissolved in the warm glycerin. The mixture of spirit and simple syrup is to be added to this solution and shaken. Each tablespoonful contains seven and a half grains of terpin.

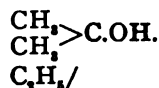
PHARMACEUTICAL NOTES ON SOME SYNTHE-
TICAL COMPOUNDS RECENTLY
INTRODUCED INTO MEDICINE.

Although we have already laid before our readers abstracts of the more important papers appearing on the compounds noted below, it seems worth while to give again a summary in a condensed form of the more important characteristics of each of these new remedies, with special reference to their mode of administration. In accomplishing this we make use of the paper read by MR. H. HELLING before the British Pharmaceutical Conference, reported in the *Pharmaceutical Journal and Transactions* for September 24, 1887.

Acetphenetidin, paracetphenetidin, $\text{NH}(\text{CO CH}_3)\text{C}_6\text{H}_4\text{OC}_2\text{H}_5$.—This antipyretic has only been in use for a short time, but the results hitherto obtained with it are described as excellent. Hinsberg and Kast have shown that a dose of 3 to 8 grains is able to reduce the temperature of the human body by 3.6° F., and the experiments carried out in the clinic of Professor von Bamberger, of Vienna, have only tended to confirm the favorable accounts of the discoverers. It appears to be perfectly devoid of secondary effects and fully able to bear comparison with all other febrifuges.

It is a grayish-white crystalline powder, without smell, producing a slightly pungent after-taste ; it is practically insoluble in water, but dissolves readily in alcohol. The melting-point is at 275° F. It is advantageously prescribed in the form of powders containing the above-mentioned dose, since from its tastelessness it is readily taken by patients.

Amylene hydrate, tertiary amylic alcohol, dimethyl ethylcarbinol,



Only a few weeks ago this compound was recommended by Professor Jolly and Von Mehring as a soporific, in which class of remedies it appears to have taken a prominent place. Before applying it to patients numerous experiments on animals had been carefully carried out. A dose of one drachm is sufficient to produce sleep for six or eight hours. No unpleasant secondary effects are recorded.

The remedy is given in water (in which it is soluble in the proportion of 1 to 12), with a little juice of liquorice.

Amylene hydrate,
Liq. glycyrrhizæ, aa ℥i ;
Aq., ad ℥i.

S.—To be shaken before use.

It is also administered in capsules of gelatin.

It is a clear fluid, with an odor reminding one slightly of camphor; it is soluble also in alcohol. Specific gravity, 0.812 at 53.6° F.; boiling-point, at 216° F.

Antifebrin, acetanilide, phenylacetamide, C₈H₇NH.CH₃CO.—Since the first experiments with this valuable remedy, performed by Drs. Cahn and Hepp in Strasburg, antifebrin has been carefully studied by others, and with the same satisfactory results. It possesses the advantages over other remedies of this class of being low in price, and, moreover, the dose is small, 2 to 10 grains once, twice, or, at most, three times a day, sufficing to produce a considerable reduction of temperature in cases of typhoid fever, pneumonia, also in erysipelas and acute rheumatic gout. It is given in powders as well as in solution; for the latter mode of administration it will be found most advisable to dissolve it in brandy, subsequently adding a little water and syrup. The following formula is given as an example:

Antifebrin, ʒi;
Brandy, ʒivss.
Dissolve, and add
Distilled water,
Simple syrup, aa ʒvi.

One tablespoonful, to be taken as directed.

The remedy is thus rendered very pleasant to take, and the patients express no aversion to it.

A good preparation should be of pure white color, and form moderately large crystals, which are but very sparingly soluble in cold water, rather more readily in hot, and easily in alcohol. Antifebrin melts at 233.6°, and boils at 563°.

Antipyrin, oxydimethylchinizine, C₁₀H₇CH₃.N₂O.—Antipyrin may fairly be considered the most popular of modern antipyretics. The dose varies from 15 to 30 grains twice, three, or more times a day. For children, 3 to 12 grains will be found to be sufficient. It is of great value in all febrile diseases, reducing temperature very promptly. Of late it has also been applied in subcutaneous injection as a local anæsthetic. In some cases a bright pink rash, like nettle-rash, will suddenly appear during treatment; this is considered to be of no importance, as it causes no inconvenience, and soon disappears.

Antipyrin is readily soluble in water and alcohol; it possesses but little flavor, and that not unpleasant, and is, therefore, adapted

for administration in solution. It thus possesses great advantages over quinine, especially in treating children, who take it very readily if mixed with a little syrup. Thus:

Antipyrin, gr. lxxx;
Simple syrup, ʒi;
Water, add to ʒiv.

Two teaspoonfuls for a dose.

This mixture is almost free from bitterness, and children do not at all object to it.

It crystallizes in colorless laminæ, which melt at a temperature between 230° and 254.4° F.

Antithermin, phenylhydrazinlevulinic acid, CH₃C(C₆H₅N—NH)CH₂—CH₂COOH, has been recommended as a febrifuge, but, although it is now obtainable in the market, details are still wanting as to dose and effect. It forms large colorless crystals of a slightly bitter taste, which cause an unpleasant grating when ground between the teeth. It is insoluble in water, and but sparingly soluble in alcohol. The most suitable form for administering antithermin is the pilular.

Aseptol, acidum sozolicum, orthophenolsulphonic acid, C₆H₄OH.SO₃OH.—By aseptol we understand a thirty-three and one-third per cent. solution of orthophenolsulphonic acid. It is almost odorless, but faintly suggests carbolic acid, and is reported to possess the antiseptic properties of the latter and of salicylic acid, standing, as regards strength, midway between them. Its superiority lies in the possession of antiseptic with poisonous or irritating properties, so that it is especially adapted for abdominal surgery and for ophthalmological operations. Sozolic acid is readily soluble in water, alcohol, and glycerin. It is applied in a solution of three, five, or ten per cent., to which strength the stronger solution can be reduced by dilution with water.

Betol, salicylate of β-naphthol ether, C₈H₇OH.COO.C₁₀H₇.—This remedy is one of the very newest and analogous to salol. It is applicable, therefore, in all those cases in which the latter is found to be of use,—viz., rheumatism, cystitis, etc. The dose is given as 5 to 8 grains in some cases of intestinal catarrh. As it is not a phenol compound, betol possesses the advantage of being freer from detrimental properties than salol.

It forms small, white, resplendent crystals, is almost devoid of taste, and, being insoluble in water, is best dispensed as a powder or in compressed tablets, or in pills made up with liquorice-juice and powder, each contain-

ing two and one-half grains of betol. It is soluble in alcohols, as also in fatty oils, and is, therefore, well adapted for being worked up with butter of cacao into pencils for the treatment of gonorrhœa. These may be prepared by melting four parts of ol. theobromæ, and adding to the warm liquid one part of betol. This readily dissolves in the fat, and the mixture is allowed to partially cool, when it is poured into moulds. The finished product contains, of course, twenty per cent. of betol. The melting-point of betol is 203° .

Hypnone, acetophenone, $C_6H_5COCH_3$.—By means of 3- to 8-grain doses of this very powerful soporific a profounder sleep is produced than that caused by chloral hydrate. Hypnone possesses an agreeable aroma, somewhat resembling a mixture of oil of bitter almonds and neroli, but its action on the mucous membrane of the mouth is almost caustic. It is dispensed, therefore, in capsules of gelatin, each of which contains one grain of the remedy, combined with ten of almond oil, to prevent any risk of unpleasant effects.

It is a colorless fluid, sparingly soluble in water, more readily so in alcohol, of the specific gravity 1.032 at 59° F., the boiling-point being 410° F.

Methylal, dimethylether of methylene, $CH_3(O.CH_3)_2$.—Methylal is a soporific of very recent date. It is administered in doses of 20 to 25 grains in water, with a little syrup.

Thus :

Methylal, \mathfrak{z} i;
Syr. orange-flower, \mathfrak{z} ss;
Water, \mathfrak{z} i.

One tablespoonful for a dose.

It has been applied externally as a local anæsthetic dissolved in oil, or as an ointment, with lard as a base. Both forms are made to contain fifteen per cent. of methylal.

It is a colorless, ethereal fluid, which smells like a mixture of chloroform and acetic ether, and tastes pungent and aromatic; it is readily soluble in water as well as in alcohol; the specific gravity at 59° F. is 0.855; it boils at 107.6° .

Naphthalin, $C_{10}H_8$.—To most fungi naphthalin has been found to be a powerful poison, and has proved very valuable as an antiseptic, being applied in the same manner as iodoform. Professor Rossbach, of Jena, first administered it internally in cases of acute and chronic enteric catarrh, in typhoid fever, and acute gastro-intestinal catarrh. It has since been extensively applied, but not with absolutely uniform results. It is given as a pow-

der in doses of 2 to 8 grains, to which a drop of oil of bergamot is added to obliterate the peculiar smell of tar belonging to it, which make it otherwise impossible for some patients to take it. For example, the following formula may be adopted :

Naphthalin, gr. xxx;
Sacch. alb., gr. xxx;
Ol. bergam., gr. i.

Make a powder and divide into ten doses, one to be taken three times a day.

Naphthalin is a crystalline body, forming colorless, resplendent scales; it tastes pungent, is insoluble in water, but sparingly soluble in cold alcohol and fatty oil, but readily if these agents are heated. The solution in oil and the ointments should be made to contain ten per cent. of naphthalin, which must be added to the warm fatty matter. Melting-point, 176° F.; boiling-point, 424.4° .

Naphthol, β -naphthol, isonaphthol, $C_{10}H_7OH$.—As a substitute for tar preparations, naphthol has been applied to the skin with very good results, especially in psoriasis and other chronic affections. A two to five per cent. solution in alcohol is the usual form of application, but it can also be made up into ointment containing three to twenty-five per cent. Internal administration of this compound was attended with toxic effects, and has, therefore, been discontinued.

It crystallizes in resplendent scales, has an aromatic odor, is slightly soluble in hot water, readily so in alcohol and fatty oil. A very good ointment can be made by adding one part of naphthol to ten of melted lard, and well stirring. The substance dissolves without much difficulty, and forms a white, smooth product.

Naphthol melts at 253° , and boils at 546.8° .

It should not be confounded with naphthalin.

Salol, phenylether of salicylic acid, $C_6H_5OH.COOC_6H_5$.—This remedy appears to give the greatest promise of future importance, for, in the short time that it has been known, it has done very good service as a febrifuge and an antirheumatic, being administered in doses of 15 to 30 grains, two or three times a day; also as a gargle, \mathfrak{z} ii. Thus :

Salol, \mathfrak{z} ii;
Spirit. vin., \mathfrak{z} iv.

A teaspoonful to a glass of warm water for stomatitis and ulcerations of the mouth and pharynx.

A salol mouth-wash is also very much recommended, and may be prepared as follows :

Take salol, gr. xl ; dissolve in ℥iv of a suitable spirituous dentifrice liquid. Half a teaspoonful to be used in a glass of water, with which it forms a milky emulsion.

For chronic forms of diphtheria it is reported to have more powerful effect than solutions of chlorate of potassium or salicylic acid. It is also applied, worked up with butter of cacao into pencils, as an antiseptic. These are prepared in a similar manner to those of betol, before mentioned.

Salol is a white, crystalline powder, of a mild aromatic odor ; it is insoluble in water, but soluble in alcohol. The melting-point is 108° F.

Thallin, $C_8H_{10}N(OCH_3)_2$.—Thallin is employed either as a sulphate or tartrate. It is rapidly obtaining a recognized position in the materia medica, for it is a reliable and powerful antipyretic, applicable in all kinds of febrile conditions. 3 to 8 grains in pill are considered a suitable dose. It is also applied externally, especially lately, with great success for injections in cases of acute and chronic gonorrhœa, for which it is prescribed in aqueous solutions containing one drachm of thallin salt in ℥vi.

Salts of thallin are crystalline powders, not quite pure white in color, of a bitter and intensely aromatic taste, and of a peculiarly persistent odor, which is similar to that of cumarin ; they are readily soluble in water, but far less so in alcohol.

Urethan, ethyl of urethan, $CO(NH_2).OC_2H_5$.—As a mild hypnotic, urethan is very useful, being administered in doses of from 15 to 40 grains, either as a powder or in solution, with a little syrup as a corrective. Thus :

Urethan, ℥ii ;
Syr. simpl., ℥i ;
Aque, ℥iii.

Two teaspoonfuls for a dose.

It does not produce a comatose condition like chloral hydrate, but tends to induce a healthy natural sleep in cases where this is impeded by other causes.

It is a crystalline body, of a mild ethereal odor, tastes somewhat like saltpetre, is soluble in water and alcohol, and melts at about 120° F.

THE EMPLOYMENT OF ANTIPYRIN IN ACUTE RHEUMATISM.

DR. BERNHEIM publishes a paper with the above title (*London Medical Record*, October 15, 1887) in which he gives notes of thirty-

four cases, comprising nineteen of acute and subacute rheumatism, eleven of apyretic rheumatism, two of gonorrhœal rheumatism, and two of neuralgia. In each case the daily dose of antipyrin varied from 2 to 8 grammes (30 to 120 grains), the treatment ceasing as soon as the pain was relieved. The drug was given in a simple solution. No untoward or disagreeable symptoms were noticed beyond profuse perspiration, which occurred in sixteen out of the thirty-four cases. Nausea, followed or not by vomiting, was complained of in four cases, but when gastric discomfort was feared the drug was given preferably hypodermically or by injection. Of these thirty-four cases marked relief was afforded in twenty-eight ; in only six cases was the effect uncertain or incomplete. In examining the effect of the drug in the different forms of the disease, it was successful in eighteen out of nineteen cases of acute rheumatism ; in eleven cases of apyretic rheumatism only twice was its administration of doubtful value, and even in these some relief was afforded, although they were undoubtedly cases of chronic rheumatism. Its effect on gonorrhœal rheumatism was less marked, and it was not more successful in a case of sciatica and one of supra-orbital neuralgia. The conclusion is that antipyrin is particularly indicated in true rheumatism, whether febrile or apyretic. The relief of pain experienced in such cases is prompt : within twenty-four hours the pain, swelling, and tenderness of the joints were less, and the pain soon disappears altogether. Dr. Bernheim, however, denies that antipyrin causes the resolution of the local lesions. The fever at once falls, but the relief of pain is not necessarily associated with this, since the same effect follows its administration in the apyretic form of the disease. Out of twenty-seven cases in which the course of the malady could not be followed to its conclusion, in twelve it persisted more than a week after the treatment was begun, varying from eight to sixty-three days ; in fourteen its duration was less than a week, and in seven of these fourteen cases the symptoms disappeared after the administration of a single dose of the drug. On the whole, antipyrin cannot be credited with any specific action on the course of the disease, for it in no way prevents the visceral lesions except in so far as the risk of complication is avoided by the period of disease being shortened. It is probably simply a powerful muscular analgesic acting through the nervous system.

DELPHINIUM STAPHISAGRA.

DR. VINCENT GAUTHIER, in a treatise entitled "*Recherches Expérimentales sur le Delphinium Staphisagra et sur la Delphinine*," Naples, 1886 (*London Medical Record*, October 15, 1887), propounds his personal botanical, chemical, and pharmacological researches on the *Delphinium staphisagra*.

This plant, belonging to the tribe of the Helleboridæ of the natural order of the Ranunculidæ, had formerly been separated from the genus *Aconitum*, to which it has recently been reunited by Baillon and other botanists. There are three species of delphinium, or larkspur,—the *D. ajacis*, *D. consolida*, and the *D. staphisagra*, the last being exclusively the subject of the author's investigations. The fruit is formed of four capsules, containing four to five black seeds, known by the name of stavesacre seeds. It is indigenous to the south of France, Italy, Greece, Asia Minor, and the Canary Islands.

The seeds of the *Delphinium staphisagra* contain, according to the researches of Marzius and of Dragendorff (1877), four kinds of alkaloids: the delphinoidine, the delphinia or delphinine, the staphisagrine, and the delphisine.

The most important of these is the delphinine, which forms an amorphous yellowish powder of resinous appearance. The chemical formula is $C_{22}H_{33}NO_4$. It is insoluble in pure water, but dissolves in acidulated water, in alcohol, ether, and in chloroform.

Only the seeds, which contain the greatest amount of active principle, have been employed for therapeutical purposes. They have been known as a very old remedy in psoriasis and as a vermifuge, in the form of powders, decoctions, infusions, and ointments.

The best form of prescribing delphinine is in granules or pills. The maximal dose is 1 to 10 milligrammes ($\frac{1}{10}$ to $\frac{1}{10}$ of a grain) during twenty-four hours, Trousseau's and Pidoux's doses of 15 to 20 milligrammes ($\frac{1}{4}$ to $\frac{1}{2}$ of a grain) being by far too powerful. Externally it is employed in ointment of one to five parts in ten parts of vaseline.

Dr. Gauthier draws the following conclusions from his experiments on the physiological and toxicological effects of the delphinine.

It is a modifier of the nervous system. It acts on the bulbous portion of the medulla and on the sympathetic nerve.

1. As regards its action on the sensibility, delphinine produces first functional excitation, followed by gradual attenuation, diminution, and final complete but transient extinction

of sensibility. The analgesia may in some cases continue for twenty-four hours. The delphinine, in order to produce these effects, acts upon the central fibres of the nerves. The effects of delphinine on the sensibility constitute its most important physiological and its sole therapeutic indication. It is in this respect preferable to aconite, being, moreover, less poisonous.

2. A small physiological dose produces no effect on the motor nerves. A toxic dose, however, rapidly destroys the functions of these nerves.

3. Its effects on the locomotor system consist in inco-ordination and ataxy.

4. The contractibility of the muscular fibres persists until the death of the animal.

5. In acting on the heart and the circulation, delphinine first accelerates the cardiac movements and renders them arhythmic. This is followed by a period of calm, characterized by rhythmic and regular contractions of greater force. Finally, the heart stops during the diastole. These effects are the consequences of the action of the delphinine on the bulbous portion of the pneumogastric nerves.

The alteration of the vascular tension of the blood consists in a transient increase, followed by a more or less marked abatement. The temperature is strictly proportionate to the modification of the tension.

6. Delphinine likewise influences the respiratory functions, causing typical irregularity of the respiratory movements, owing principally to the spasmodic condition of the respiratory muscles (the abdominal and intercostal muscles, and the diaphragm). In consequence of the arhythmic respiration, hypercarbonization of the blood takes place. When the tetanic spasm reaches its maximum the pulmonary movements cease, and the animal dies of asphyxia.

Death is brought on by the cessation of the respiration, and not by that of the action of the heart.

7. The effects of delphinine on the digestive organs are vomiting and diarrhœa.

8. The pupils are affected by means of the cilio-spinal centres; myosis is followed by mydriasis. The dilatation of the pupils may take place even after most minute doses of the alkaloid.

9. Delphinine is eliminated by increase of the secretions of the saliva, bile, urine, and of the intestinal secretions.

The treatment of poisoning by delphinine is guided by our knowledge of the mechanism

of the death from this alkaloid, which takes place by cessation of the respiration. Artificial respiration, therefore, must be at once resorted to in order to gain time for the elimination of the poison. There exists only a partial antagonism between delphinia and other alkaloids, with strychnia with relation to the sensibility, with atropia as regards the cardiac arrhythm. But neither strychnia nor atropia will succeed in preventing death from delphinia if the artificial respiration has been delayed and neglected.

The therapeutical indications of delphinia are suggested by the physiological action of this alkaloid on the sensibility; it may therefore be employed in neuralgia, and perhaps in certain hyperæsthetic affections or in neuralgia of the fifth nerve. As to the mode of its administration, the internal use will be preferable to subcutaneous injections, on account of the insolubility of the alkaloid in pure water. The maximal dose of 1 milligramme ($\frac{1}{100}$ of a grain) may be repeated every two hours until the effects become manifest.

The external application cannot have much anodyne power, the absorption of the medication being almost *nil*; besides, it is by its action upon the bulbous portion of the medulla that the specific effects are produced.

Reviews.

A PRACTICAL TREATISE ON RENAL DISEASES AND URINARY ANALYSIS. By William Henry Porter, M.D., etc. Containing one hundred illustrations. New York: William Wood & Co., 1887.

For ten years, the author tells us, he has had ample opportunity for studying the various lesions of the kidney, and the ideas advanced by him are based upon the results of over one thousand autopsies. He has endeavored to present the subject of renal disease not only from the pathological and clinical point of view, but also from the physiological stand-point. The work opens with a brief but clear *résumé* of the anatomy and physiology of the kidney. The diseases of these organs occupy the greater part of the volume; there is also a chapter on diabetes, and a concluding section on urinary analysis in its widest sense.

Diseases of the kidney are studied under the headings of "acute parenchymatous metamorphosis, or acute parenchymatous nephritis," "chronic parenchymatous meta-

morphosis," embracing the three forms of large white kidney; "acute diffuse nephritis," "chronic diffuse nephritis," embracing the three forms of the disease. Chapter V. treats of "complications of renal lesions and treatment of chronic diffuse nephritis."

Acute and chronic sclerosis, gouty kidneys, hyaline, albuminoid, or waxy kidneys, with a summary, form the topics of Chapter VI.; the remainder of the first section embracing chapters on Renal Hemorrhage, Hæmatoglobulinuria and Anæmia, Acute and Chronic Congestion, Pyelonephritis and Pyelitis, Pyonephrosis, Hydronephrosis, Renal Calculi, Chronic Atrophy and Hypertrophy, Cysto-Scrofulous Kidneys, Infarction, Fat Embolisms, Pyæmic Emboli, Sarcoma, Adenoma, and Lipoma, Parasites, and Glycosuria.

This summary will give an idea of the general arrangement of the book; as for its actual character and value, it must be said that the author has done the mere literary part of the work well; his descriptive writing is clear and forcible.

The diagrams of the different renal diseases are carefully and minutely drawn. In discussing treatment the author is far more satisfactory than the generality of writers upon renal diseases. He does not generalize as many do, and after describing many varieties of diseases mass the treatment of all in one comprehensive paragraph. In acute diffuse nephritis, *jaborandi* seems to be his main reliance, either in the drug or its alkaloid; from observing a large number of cases he deduces "that it is not depressing to any notable degree, and is always followed by most desirable results." Its action he concedes should be very carefully watched. *Digitalis* is the remedy of the acute state. The potassium salts are contraindicated. Opiates cannot be used in the uræmic attacks of children, and iron in tincture of the chloride only when it tends to assume the chronic form.

In the parenchymatous metamorphosis of pregnancy, which he calls the second form of large white kidney, the author relies mainly on a modified Basham's mixture, giving ether or chloroform to prevent the return of convulsions, and he considers pilocarpine as useful to the mother, since it "undoubtedly causes the rapid expulsion of the child," "apt to be still-born," but it will often save the mother's life.

The chapter on "Complications of Renal Lesions" presents one of those extremely-useful articles which give us a view of the

relations of diseases with each other. Were the author to base his claims for respectful hearing upon this chapter alone he would not be unwise. Especially valuable are his hints for the treatment of intercurrent disease, the bronchitis, the cardiac lesions, the asthma, dropsy, constipation and diarrhoea, eczema, erysipelas, and the gastric affections. In oedema of the larynx he suggests a trial of O'Dwyer's tubes. In peritonitis, often a disease of renal origin, opium, he says, "while it may decidedly improve the peritonitis increases the strain on the renal organs." "Will the kidney's epithelium stand this extra strain?"

This question has a direct bearing upon abdominal surgery. Cases have occurred within the author's observation where, with rapid repair going on in the abdominal incision and intra-peritoneal wound, the patient had yet died with "symptoms commonly classed as septic." Close investigation revealed "a rapidly developing acute parenchymatous metamorphosis of the kidneys." The bladder in all these cases contained urine showing albumen and abundant characteristic casts. If, then, after abdominal operations, when on the second or third day certain symptoms enumerated by the author make their appearance, "copious draughts of simple or medicated waters" be given, the quantity of urine will be increased. Albumen and casts disappear, and the threatened septicaemia vanishes. The author gives us his theory of the causation of this condition of the kidneys after operation. Anæsthesia, the increased necessity for elimination, the often unavoidable use of opium, these are his main factors. In renal pneumonia, "free and early cardiac stimulation by ammonia and alcohol." Ergot is useful in steadying "the contraction of the arterioles;" digitalis should be avoided as causing heart-failure. Uræmia is very carefully studied in this chapter. A pill of caffeine, strychnine, and digitalis is recommended; "but for a quick action," Basham's mixture with spiritus eth. nit. Where there is a "nervous element," which the author takes some pains to explain, he gives us a tonic, a mixture of nux vomica, damiana, and gentian, upon which he evidently places great value, and which he recommends in other conditions and frequently refers to.

The chapter on "Parasites" is well illustrated. In "Glycosuria" the author gives the result of numerous autopsies, and has written a chapter of great interest and value. Some of his views are novel. He divides the

disease clinically into the temporary, the mild, and the severe. The relation between the failure of digestion in advanced glycosurics and the increase of kidney-lesion, shown by casts and albumen, is dwelt upon at some length. In these cases, if the condition of the kidney can be improved, the digestive symptoms will disappear and the appetite return, showing, he thinks, that the failure in digestion was not the result of overstrain of the digestive organs from the limited diet, but from difficulty of elimination. Very excellent diet tables are given, which, however, present no new points of interest. The diet-list of Professor Andrew H. Smith is also given. The second section of the work is devoted to "Urinary Analysis," and goes over the ground thoroughly. The student and practitioner can turn to him as a guide and manual on the subject without fear or disappointment. The illustrations of microscopical examinations are good, and the text is suggestive everywhere with diagnostic points, which render the second section more valuable. In short, the book is one which cannot be read carefully without giving us some more complete idea of renal disease, and from its perusal one surely must rise somewhat better fitted to engage in the struggle with a group of diseases more misunderstood and more insidious perhaps than any other with which the medical man is brought in contact.

E. W. W.

DIE MORPHIUMSUCHT UND IHRE BEHANDLUNG. Von Dr. Albrecht Erlennmeyer. Dritte vermehrte und verbesserte Auflage. Mit 22 in den Text gedruckten Holzschnitten.

Berlin C., Leipzig, Neuted, Heuser's Verlag (Louis Heuser), 1887.

Most German medical books portray in the poorness of their paper and general make-up the frugality of the German nation. The present volume is evidently an *édition de luxe*. With its broad margins and its large clear type, it appears almost like a new departure in medical literature. Evidently Dr. Erlennmeyer is a successful book-writer or practitioner, and likes to see his offspring arrayed like unto Solomon in all his glory. In the nearly five hundred pages of the work the whole subject of the morphia-habit is treated in a most detailed manner. Indeed, a work of such magnitude upon so small a theme could not, we think, in this country have met with financial success, let its merit be what it would. The fact that the first edition of the treatise was exhausted inside of six weeks and the

second in four years, shows that the Germanic mind is much exercised upon the subject of the morphia-habit.

The book is divided into nine chapters. Of these the most interesting are the third and fifth, in which are respectively discussed the symptoms and treatment of the morphia-habit. Specially worthy of note in the second chapter we find the report of a case in which fatal tubercular poisoning is believed by Dr. Erlenmeyer to have been produced by infection with the hypodermic needle. A physician, aged 38, who had been accustomed to use the same syringe for himself and a tuberculous patient, died suddenly, and at the autopsy a tuberculosis, strictly localized to the peritoneum, was found. A fact, of which we confess we had not before had knowledge, is that children born of morphia-eating mothers are practically morphia-eaters, and during the first days of their life, unless morphia is given to them, are very apt to suffer collapse. This condition may end in death, and seems to be parallel to sudden giving out of the system which sometimes follows the sudden withdrawal of the alkaloid in the adults. Several cases are related on page 45 in which newborn children, in such collapse, were apparently saved by hypodermic injections of morphia. Dr. Erlenmeyer asserts that whilst sugar is frequently found in the urine after acute poisoning, it is never, or very rarely, present in chronic morphia-poisoning.

In the fifth chapter three methods of treating the morphia-habit are discussed in detail. The first of these methods is that whose central idea is the sudden and complete withdrawal of the morphia. Under these circumstances violent delirium is very prone to occur, and is not rarely accompanied by severe and even fatal collapse. On account of its danger this method of treatment is condemned by Dr. Erlenmeyer. Another plan of treatment, which is also condemned, is the very gradual withdrawal of the morphia. The method which is favored is a rapid but not sudden denial of the alkaloid to the patient. When the habitual dose has been not over seven grains of morphia a day, the alkaloid is to be withdrawn entirely in the course of six days. When the quantity has been greater than this, ten or twelve days may be required. Under such rapidity of withdrawal collapse is said never to occur. Burkart's experience, that the hypodermic users of morphia yield much less rapidly to treatment than do those who take the alkaloid by the mouth, is confirmed by Erlenmeyer. The experience of

the writer of this review distinctly coincides with that of Dr. Erlenmeyer in believing that the best treatment of the morphia-habit is to be found in the rapid but not immediate withdrawal of the poison. The use of cocaine for relief during the first period of abstinence is condemned by Dr. Erlenmeyer.

In conclusion, we can commend this book to any one who is desirous of a sumptuous volume, containing all that is known in regard to the opium-habit. The bibliography at the end of the book contains a descriptive list of two hundred and sixty papers and books upon the subject.

DIFFERENTIAL DIAGNOSIS. A MANUAL OF THE COMPARATIVE SEMEIOLOGY OF THE MORE IMPORTANT DISEASES. By F. Dehavilland Hall, M.D., Assistant Physician to the Westminster Hospital, London. Third American Edition. Thoroughly revised and greatly enlarged. Edited by Frank Woodbury, M.D. Philadelphia: D. G. Brinton, 115 South Seventh Street, 1887.

The present volume is a book of two hundred and fifty pages, in which it is attempted to give the diagnosis of all of the diseases, not surgical, to which flesh is heir. In spite of the use of tables, and double columns of fine or coarse print, the effort is scarcely a successful one. No doubt the student or the ill-informed practitioner may glean from the pages a good deal that is to him of great importance; but there can be no comparison between the book and that of Professor Da Costa upon the same subject. Upon looking over the diseases of the nervous system with a good deal of care, we find much that, according to our thinking, is not exactly correct. Thus, the statement on page 87, "The high temperature of cases of sunstroke serves to distinguish such from the coma of apoplexy," is, in its unqualified condition, simply incorrect. Very high temperature may be present in an apoplexy. Then, again, the diagnosis between cerebral hemorrhage, cerebral thrombosis, cerebral embolism, although compiled from various authorities, is not accurate. Pain in the head is in no sense a characteristic of cerebral hemorrhage as opposed to cerebral thrombosis. There frequently is loss of consciousness in cerebral thrombosis, and almost as frequently no loss of consciousness in cases of slight hemorrhages. The recovery after cerebral thrombosis is certainly no more slow than after cerebral hemorrhages, as would seem to be indicated by the text before us. Then, again, spastic cerebral hemiplegia, spoken of on page 100, is not an equivalent of poli-encephalitis;

although, as this subject is a very obscure one, an error here is excusable. The portion of the book which treats of the respiratory apparatus seems to us to be more satisfactory than that which discusses diseases of the nervous system. The fact that the work has reached its third edition indicates that it has met a want, but we sincerely hope that it has not taken the place of more elaborate treatises upon the same subject.

A REFERENCE HAND-BOOK OF THE MEDICAL SCIENCES.
 Edited by Albert H. Buck, M.D., New York City.
 Volume V.

New York: William Wood & Co., 1887.

With commendable regularity the successive volumes of this great work follow one another. The one before us commences with Miliaria and ends with a very elaborate article, from the pen of Dr. E. H. Bradford, upon Pott's disease. On looking over the volume we find that it presents the same characteristics as those which have been previously published. To us it is especially valuable on account of the curious out-of-the-way information which it contains, often upon subjects of great practical importance. The first article that attracted our attention, probably on account of its numerous illustrations, is one upon poisonous insects. Reading it over, we felt assured that it must have been written by the well-known American entomologist, Mr. Charles V. Riley, a conclusion which was confirmed by reference to the end of the article. In this paper are described, with anatomical and scientific exactness, all insects, from the mite to the tarantula, or the great centipede, that are capable of injury to men. Some of these creatures we trust our readers may never make acquaintance with. Especially will the big bedbug of Arizona strike terror into the heart of the Eastern housewife, if ever it finds its way into civilization: nimble-footed, enormous in size, armed with a beak nearly the fifth of an inch in length, this pest causes in its victim a convex wheal an inch or more across, followed by great pain and itching, and after some days a discharge of pus.

A very elaborate article, learned and interesting, is that by Dr. J. N. Mackenzie, of Baltimore, upon neuroses of the nose. We have not time to follow the discussion, in which he reaffirms the correctness of his well-known belief that in that portion of the nasal mucous membrane which covers the turbinated corpora cavernosa there is a sensitive spot whose irritation produces a reflex cough, whilst the remaining mucous membrane of the

nose is almost insensitive. The discussion which this theory or alleged fact has given rise to is stated by Dr. Mackenzie with commendable fairness.

In previous notices we have called attention to the value of the descriptions of Health-Resorts and Springs scattered through the work. Volume V. conforms in this as in other respects with those that have preceded it. As an instance of an excellent climatic article, we notice one by Dr. H. Richards upon New Mexico, immediately followed, as it so chances, by articles on New Orleans, Newport, New South Wales, and New York City, all from the same pen.

LESSONS IN GYNÆCOLOGY. By Wm. Goodell, A.M., M.D., Professor of Clinical Gynæcology in the University of Pennsylvania, etc. Third edition, thoroughly revised and greatly enlarged, with one hundred and twelve illustrations.

Philadelphia: D. G. Brinton, 1887.

The author by no means considers this work as a complete treatise. Its teaching is very largely clinical, and the aim of the work practical in the extreme. It is a mirror of the author's system of class instruction, and illustrates his somewhat peculiar gifts as a teacher and lecturer. The present third edition is much enlarged, containing six entirely new lectures and many new illustrations. Perhaps the distinguished author has done no more useful work than in writing the chapter on "Nerve Counterfeits of Uterine Diseases," and in the decided stand that he takes everywhere against unnecessary uterine "treatment." Throughout the volume the author's descriptions of cases lend an additional interest to the didactic matter. The illustrations are clear, plain, and easy to comprehend, and to the operator will prove invaluable.

A MANUAL OF THE PHYSICAL DIAGNOSIS OF THORACIC DISEASES. By E. Darwin Hudson, Jr., A.M., M.D., etc.

New York: William Wood & Co., 1887.

There are many excellent manuals within reach of the student and practitioner, and yet this volume strikes us as somewhat unique and as deserving attention. It recognizes, as does no manual of diagnosis within our remembrance, some of the real difficulties in auscultatory diagnosis, as, for example, the distinction between pleural and pulmonary crepitant and subcrepitant râles. Not that other writers are ignorant of the difficulty, but rather that they treat it as a small matter, and one by no means likely to prove trouble-

some to diagnosticians of their calibre. The author, however, in this and many other instances, admits that to err is human, and his rules for avoiding error in such cases seem to us better, clearer, and more intelligible than usual.

The illustrations in the book are also excellent, and impress the eye, so that a mental picture of dulness areas is retained long after the page is turned. There are no useless words, but a study of clearness in expression. The author believes in the "Ellis line" of dulness in pleural effusions in a majority of cases, but does not go into the theory connected with it, so ably illustrated in the experiments of Garland,—a theory which, it seems to us, if once accepted, necessitates a restudy of the whole question of pleural effusions. The chapter on "Synopsis of Heart-Disease" will be found extremely valuable to the student.

E. W. W.

VON ZIEMSEN'S HANDBOOK OF GENERAL THERAPEUTICS. Volume VI., ELECTRO-THERAPEUTICS. By Wilhelm Erb, M.D. Volume VII., THERAPEUTICS OF CIRCULATORY DERANGEMENTS. By Professor M. J. Oertel, M.D., of Munich.

These two books complete this so-called "Handbook of Therapeutics," which is really a work of a succession of monographs covering almost all methods of the treatment of disease not connected with drugs. These two volumes are fully up to the standard of those which have gone before them, and especially is the work of Professor Oertel of importance. In an editorial in the October number of the GAZETTE, reference was made to the labors of Professor Oertel.

THE MEDICAL ANNUAL AND PRACTITIONER'S INDEX. A WORK OF REFERENCE FOR MEDICAL PRACTITIONERS. Edited by Percy Wilde, M.D., 1887.

Bristol: John Wright & Co. London: Hamilton, Adams & Co., etc.

This is a convenient and attractive epitome of practice, both surgical and medical, wherein are introduced, together with the standard and orthodox modes of treatment, all the discoveries and improvements of the past year. Owing to its alphabetical arrangement and its plain head-lines, it is easy to find anything in a moment. A somewhat extended perusal of the book convinces us that it is all that its editor claims, and will prove a great assistance by giving at a glance a thorough digest of the year's advance on any desired subject. Authorities are given in all cases, long citations where necessary, and the small size of the volume will allow of its being carried in the

pocket. Such a book, kept at hand and read at spare moments, would do much to bring the hard-worked rural practitioner fully up to the standard of his more fortunate brother, who has, perhaps, more time, more access to journalistic literature, and inhabits some medical centre where it is as hard to fall behind as it is in the country to keep up with the rapidly increasing knowledge of the day.

E. W. W.

Correspondence.

BERLIN.

(From our Special Correspondent.)

On the 29th of September a stroke of paralysis ended the life of a man who was universally acknowledged by the medical world of Germany to be the leading surgeon of the times.

Bernhard von Langenbeck, the indefatigable and persevering investigator, the inspiring teacher of the academic youth and of the physicians of our nation, the most magnificent operator of the day, the great-hearted humanitarian, the high-minded and noble gentleman, the most genial colleague, and the winner of highest honors, is no longer among the living.

Foreign countries mourn with us the loss of our great surgeon, and surely many of the readers of this journal will recall with gratitude the hours when they were privileged to listen to the instructions of our departed teacher; America also, who sends yearly a large number of physicians to the German clinics to complete their education.

Bernhard v. Langenbeck was born on the 9th of November, 1810, at Horneburg, in the province of Hanover. He was the nephew of the famous surgeon and anatomist, Konrad Johann Martin Langenbeck, who, until 1851, had worked for nearly half a century at the University of Göttingen. Langenbeck also studied in Göttingen, and took his degree of Doctor of Medicine in 1835. He then made a scientific visit to France and England. On his return he domiciled himself in Göttingen as *privat-docent*. He was there made *professor extraordinarius*. In 1842 he was called to Kiel as *professor ordinarius* of surgery. He served in the war of Schleswig-Holstein against Denmark as general staff surgeon of the army, and had charge of the surgical service of the Lazarets. In the year 1847, in consequence of the death of Dieffenbach, he was called to

Berlin, and given charge of the royal surgical clinic.

This clinic at the time contained twenty-eight beds, and under his régime grew to what it is to-day,—one of the first and largest surgical clinics in the world. Again, during the campaign against Denmark in 1864, Langenbeck was called to the position of surgeon-general, and in the same year was raised to the nobility. He also took part in the Austrian campaign (1866), and in the Franco-Prussian war (1870-71) as consulting surgeon. In 1882 he gave up his professor's chair in Berlin and went to Wiesbaden, where he remained until his death. During the last years of his life he rarely even attended calls for consultation. It was only a year ago that he suffered from cataract, which, however, was successfully operated upon.

Langenbeck's scientific renown is especially in the field of operative surgery, and it was he who first brought the conservative principle of surgery into practice. His resections and methods of osteotomy, his plastic operations and tenotomies, are still deemed worthy of imitation.

Besides this, his activity during the different campaigns in which he took part enabled him to gather his experiences in a series of works, which secure for him the deserved title of the first army surgeon of the world. No books refer to the work Langenbeck did as an operator, and the history of his skill can only be handed down to posterity by those who listened with interest and wonder to his teachings, and who have stood by him at the operating-table. There is hardly any class of surgery in which he did not work in a new and often highly original manner. The students who worked under his tuition are scattered far and wide over the globe, and their names echo loudly the renown of their great master, at whose feet they once sat.

Esmarch, W. Busch, Billroth, Hueter, Schoeborn, Trendelenburg, Gurlt, Luecke, these are a few of those who once were his assistants. The Surgical Congress of Germany and the Medical Society of Berlin, of both of which he once was president, have determined to hold a grand memorial celebration in honor of the great departed surgeon in the spring of next year.

During this autumn over in America the greatest interest was aroused in reference to the International Medical Congress, which, according to the accounts of several journals here, was half a failure. At the same time, among the many conventions held, the Con-

vention of German Physicians and Naturalists took the first place. This learned society (which meets every September) was founded in the year 1822, principally through the efforts of Okens, in Leipzig. Since then it has met regularly for sixty years, except during war times or when cholera was raging in the country.

The organization of the society is a thoroughly free one. It has no standing committee. Every branch society chooses a meeting-place for the next year, and appoints two business managers, upon whom is devolved the entire business of the convention. Anybody can become a member who has proved himself to be a writer and investigator in some branch of medicine or natural sciences.

These meetings of physicians and natural scientists become yearly the centre of attraction to the scientific world of Germany. They bring together at their meetings from one to two thousand members. Of course the number depends somewhat on the place of meeting. When the convention was held in Berlin over four thousand members were present. Austria is always represented very largely, also Switzerland, the Netherlands, and other neighboring countries.

As in the International Medical Congress, so also in our convention, articles of general interest only are read in the general meetings, while articles on any special scientific subject are placed in their respective departments. The number of these articles read during this last year's meeting, which occurred at that well-known watering-place Wiesbaden, was twenty-eight. The managers of the society this year were the chemist R. Fresenius and Dr. Arnold Pagenstecher. Among the lecturers at the general meetings were Virchow, the chemist Wislicenus from Leipzig, Pryer, professor of physiology at Jena, Professors Meynert and Benedict from Vienna, and the well-known bacteriologist Hueppe. The convention lasted for one week, and was combined with many festivities, which were pleasant interruptions to the work. Besides this there was a very large and complete exhibit of scientific instruments and apparatus, also plans, charts, and models, and pharmaceutical preparations.

These were contributed by some five hundred exhibitors, and formed a most interesting part of the programme, and gave a very good idea of what technique has done during the last few years for the advance of scientific investigation, for the teachings of natural sciences, and for hygienic medicine and surgery.

We can only give a sketch of the pharmacological part of the exhibition. Among the exhibitors were nearly all the leading German manufacturers,—E. Merk, of Darmstadt; Eugen Dieterich, of Helfenburg; Jaffe and Darmstädter, of Berlin; and many foreign firms, as well as the great firm of Burroughs, Wellcome & Co., of London.

Among the exhibition of prepared drugs we found quite a number of novelties. A heart-poison, *strophanthus hispidus*; several antisiphilitics, *solanum paniculatum*, *jacaranda lancifolia* and *mimosifolia*, *tribulus lanuginosus*, *francicea uniflora*; one antiepilepticum, *capparis soriacea*; stomachics, *erodia fraxinifolia* and *aletris farinosa*; a remedy for diabetes, *eugenia jambolena*; a new remedy for asthma, *atherosperma moschata*; a remedy for intermittent fevers, *chionanthus virginiana*.

The new German colonies in West Africa sent *nucis kolæ*, which contains two per cent. of caffeine, and is, therefore, recommended in neuralgia; also *nucis cali*, which are said to be similar to *sem. Calabar*.

There were several drugs which have come into favor last year, among which we must mention the *hydrastis canadensis*, which seems to have permanently established itself in the practice of medicine.

Concerning the “*pharmacopœia elegans*,” the German manufacturers are continuing to strive with increased energy to perfect their preparations, and to satisfy all demands, not only for outward form and appearance, but also for taste and assimilation. America is somewhat in advance of us in this line. Still, several of the preparations which we have introduced are coming more and more into favor; the “*fluid extracts*,” for example.

The exhibition also showed the great advance recently made in dermatological preparations, this department being very complete and containing much new material. While formerly only official pharmaceutical preparations were compounded in the laboratories, now the manufacturing of *dermatotherapeutic* remedies has become a specialty in itself.

New remedies, such as *ichthyol*, and new salve bodies have been discovered. The place of the old-fashioned fat is taken by *vaseline*, *lanolin*, soap, and, lastly, by *mollin*,—a mixture of fat and glycerin. Then a new specialty is springing up in the soap industry,—viz., the preparation, principally by means of centrifugalization, of a perfectly neutral soap, in which various drugs and remedies may be incorporated; also the manufacturing of the

American rubber plaster, which was so quickly introduced here, has become a German industry.

The science of therapeutics owes a great debt of gratitude to organic chemistry, which of late has been taking immense strides, for having supplied it with a number of new remedies, some of which are still in a state of probation and experiment. Foremost among these are the new derivatives of *benzol*. Among these a veritable bonanza of antipyretics and antiseptics seems to have been found. While the base derivatives containing nitrogen seem to be of service as antipyretics, those free from nitrogen and containing oxygen seem to have greater antiseptic properties. Some derivatives, however, seem to be efficacious as both, as, for example, *salol*. Formerly it was thought that the more complicated derivatives of *benzol* (such as the *chinolin* and *pyridin* group, from which also the neutral alkaloids are supposed to be formed) principally contained antipyretic properties. It now, however, is proved by *acetanilide* (*antifebrin*), which has been so recently taken up, that also the simple and perhaps the most base derivatives of this highly interesting body also contain antipyretic properties. Another interesting derivative of *benzol* is the recently discovered acid called *sulphinid saccharin*; and now, as such quantities of this drug are in the market, it will soon be shown to what an extent this acid has the power of replacing sugar, in diabetes, for example. The *menthan* group has also contributed new material to therapeutics, especially *hypnotica*, and of which the latest (hydrate of *amylen*) is still undergoing further experiments.

Electro-therapeutics was also wonderfully well represented at this exhibition. The collection of surgical instruments was also very complete, and various different novelties in the different specialties—ophthalmology, laryngology, rhinology, gynecology, dentistry, etc.—were shown.

Besides this convention of physicians and naturalists there were a series of special conventions taking place during September in Germany. In Frankfort-on-the-Main there was a convention of specialists of insanity and brain-diseases, and in Heidelberg there was a meeting of the Ophthalmological Society. This last-named society, by the way, celebrates its twenty-fifth anniversary next year, and purposes then to hold an international ophthalmological convention in Heidelberg. After the flood-tide of interest caused by the convention, which, during the

autumn months, is an all-absorbing topic to the medical and scientific world, somewhat subsides, quiet, but equally as intensive and active work begins again among the local societies. In my next letter I purpose to report to you on the first session of the Medical Society of Berlin (Berliner Medicinischer Verein), which is already hard at work.

Finally, let me make mention of an important investigation which has recently been taking place in the hygienic institute of Dr. Koch, which will be of special interest to the readers of the THERAPEUTIC GAZETTE, as the worker is one of their countrymen, Dr. Ernest Laplace, of New Orleans.

Laplace carefully examined the "sublimite bandage," which is being so extensively used in the practice of surgery, to ascertain, firstly, whether it was really germless,—that is, aseptic; and, secondly, whether it was also antiseptic. The result of his investigating experiments showed that the most of the bandages examined proved to be in conformity with the first condition. However, he found that when the sublimate came into contact with substances containing albumen, in consequence of the residue of mercurial albuminate which was formed, the antiseptic properties (which it otherwise has when not in contact with albumen) were hindered and lessened.

To prevent the formation of such a residue, Laplace added acids to the solution of sublimate, and found that a certain amount of tartaric acid had the desired effect. To a five per cent. solution of the sublimate two per cent. of tartaric acid should be added, and the neutral gauze bandage steeped in this solution, then wrung out and dried. When this bandage was brought in contact with serum or blood containing pus-bacteriae, these were always killed. This bandage was practically tested by Dr. v. Bergmann in several surgical clinics with great success. Even when used on discharging and sloughing wounds it always remained sterile.

The employment of tartaric acid with sublimate in solution in the preparation of bandages is of great importance in the practice of surgery, and should be most highly recommended, as the full actions of the sublimate are thereby retained, by means of the acid, even in the presence of fluids or discharges containing albumen.

The tartaric sublimate bandage does not interfere in the least with the simultaneous employment of other dressings or remedies, such as iodoform, caustic, etc. This has been proved by careful experiment. The wounds

are not irritated by it. For the treatment of fresh wounds Laplace recommends washing and irrigation with the following solution :

R Sublimate, 1;
Acid. tartaric., 5;
Aqua dest., 1000.

The bandage should be prepared with—

R Sublimate, 5;
Acid. tartaric., 20;
Aqua dest., 1000.

The bandage or cotton-wool must be neutral and entirely free from all fat, and should be soaked in this solution for about two hours, then carefully wrung or pressed out, and then dried. The sublimate dissolves better in the acid solution than in the pure water. The solution will readily cling to the fibre of the bandage without injuring it in any way, and renders it perfectly germless. Four quarts of the solution will be enough to impregnate one hundred metres (about one hundred and twenty yards) of bandage.

PARIS.

(From our Special Correspondent.)

An important investigation on *colchicum*, *colchicine*, *colchicine*, and *hermodactyls* has just been completed by Dr. J. V. Laborde, of the Academy of Medicine, and M. A. Houdé, a pharmacist of the first class. They have succeeded in devising a good process for extracting *pure crystallized colchicine*, and practical methods for its *quantitative estimation* in the drug and its preparations, as well as for its *detection* in animal tissues for *medico-legal purposes*. Their mode of extraction is a novel one, as they avoid the use of mineral acids and acetic acid, alkalies and alkaline earths, all of which change colchicine into colchicine, a comparatively inert substance, or, at least, much inferior in medicinal virtues. They operate as follows: Powdered colchicum-seed is exhausted by percolation with about three times its weight of alcohol of ninety-six degrees. The percolate is filtered, and evaporated in vacuo at a low heat till the last traces of alcohol have been driven off. The residue, consisting of two layers,—one a watery liquid and the other an oily substance, lighter and nearly twenty times as bulky,—is shaken in a separator with a five per cent. solution of tartaric acid, the operation being repeated until Mayer's test no longer affords a white precipitate with the

washings. In this way the oily substance, which contains most of the colchicine, yields it to the acid solution, whose effect is possibly to decompose the oleate of colchicine there probably existing. The acid liquors are next shaken with ether, perfectly free from alcohol, to remove coloring-matters, traces of oil, etc. (colchicine being insoluble in ether), and then agitated with successive portions of chloroform till exhausted. The chloroform of the solution is now distilled off, and the brown residue redissolved in the smallest possible quantity of chloroform, and petroleum benzine of sp. gr. 0.620 is cautiously added in very small portions, until all the coloring-matters have been separated, and a limpid, colorless solution results. Finally, the liquor is left to evaporate spontaneously, and in a few hours colchicine, crystallized in long white needles, is obtained. One feature of this process is that no alkali is used; another is the addition of benzine, which, by the way, is a delicate point, as benzine, after at first separating the impurities, will, if added in too large a proportion, end in separating also the colchicine from the chloroform solution. Colchicum-seeds afford thus 3.35 per thousand of crystallized colchicine, and the root 0.45. All the parts of the plant contain more or less of the active principle, the fresh flowers ranking between the seed and the corn. Hermodactyls were also found to contain colchicine, a fact confirming Professor Planchon's opinion that the drug sold under this name in commerce is derived from a colchicum, probably the *C. variegatum*.

The behavior of crystallized colchicine with reagents, etc., was found to agree in general with the description already given by investigators operating with the amorphous principle. There is, however, a remarkable exception, namely, the ferric chloride test recommended by Dragendorff as affording a permanent green coloration. Messrs. Laborde and Houdé disagree from this opinion, and say that the green color does not appear with pure crystallized colchicine, but only when it is contaminated with colchicine. Indeed, they consider the test a very sensitive one for detecting minute quantities of colchicine, even when mixed with large proportions of colchicine. Another contrast between the two substances is, that while colchicine is intensely and persistently bitter, colchicine hardly presents any bitterness, unless when contaminated with colchicine. To pass briefly over the chemical history of the substance, suffice it to say that M. Houdé considers colchicine a nitro-

genated neutral principle with the formula $C_{44}H_{77}NO_{14}$ ($\sigma = 16$), from which colchicine differs by the loss of an equivalent of methylic alcohol. Experiments having proved that the change of colchicine into colchicine is accompanied with the formation in the presence of acids of a methylic ether, there is good ground for regarding colchicine as a methyl-colchicine, just as codeine is nothing else than a methyl-morphine.

For *toxicological researches* the following process is recommended: The organs, well divided, are exhausted by maceration with alcohol of ninety degrees, holding some tartaric acid in solution; the spirit is distilled off in vacuo; the residue, after filtering out the fatty substances, is shaken repeatedly with chemically pure chloroform; and finally spontaneous evaporation yields pure colchicine in the amorphous state. Although simple, the method is guaranteed to be reliable and sensitive. Most of the poison is found in the stomach, the bowels, the liver, and the pancreas; the saliva and kidneys contain least, while the blood never shows a trace.

The Pharmacy of Colchicum.—The foregoing renders criticism easy respecting pharmaceutical preparations of colchicum. Messrs. Laborde and Houdé condemn, for apparently good and sufficient reasons, all preparations made with acetic acid; they would also discard all preparations from the tubers and all wines of colchicum; the first because too unreliable, and the second because they have not succeeded yet in estimating the colchicine therein contained by their general process of extraction. Only the three following galenicals are considered worthy of retention, namely, a tincture of the fresh flowers, made with equal weights of the drug and alcohol of ninety degrees; a tincture of the seeds, from the finely-powdered drug and five times its weight of eighty per cent. alcohol; and finally an extract of the same, made by exhausting the powdered seeds with eighty per cent. alcohol, and evaporating the liquor at a low heat to the consistence of a soft extract, care being taken to keep in all the resinous and fatty substances, as they hold most of the colchicine. The doses for twenty-four hours are as follows: Of the tincture of fresh flowers, 10 grammes ($2\frac{1}{2}$ drachms), corresponding to 5 milligrammes of colchicine; tincture of the seeds, the same, equivalent to 7 milligrammes; extract, five pills of 3 centigrammes ($\frac{1}{2}$ grain), representing 5 milligrammes of the active principle. But, in preference to all preparations, granules containing 1 milligramme ($\frac{1}{100}$

of a grain) of crystallized colchicine are recommended, also a wine, and a solution for hypodermic uses.

To conclude with the therapeutics proper of colchicine, Dr. Laborde considers it a sure cure and preventive of gouty affections in all their forms. When the fit is well on, he advises, for the first day, four granules of 1 milligramme, given at fifteen minutes' interval; for the second, three granules; for the third, two; and the fourth only one. Then stop the medication for six or eight days, and begin it again in the same manner, if necessary. As a preventive, when a fit is felt to be imminent, he begins with three granules, and decreases the quantity as above. He says he has never failed, but it must be borne in mind that the climate of France is eminently favorable to the cure of gouty affections.

Some scepticism begins to be felt in regard to *kephir*,—the fermented milk,—so much extolled at first. Any other ferment than the true Caucasian was declared to produce a vulgar beverage, not to be compared with genuine kephir, as it did not contain the characteristic bacillus. But now Dr. Levy, of Haguenau, has demonstrated that the same result can be obtained by following the usual method for preparing kumyss, an opinion shared by other scientists. M. E. Reeb proposes the subjoined ready process: To milk, freshly curdled and thoroughly beaten, add two per cent. of simple syrup, and place the whole in a strong bottle securely corked, which is kept for three or four days at a moderate temperature. The beverage is now fit for use. It is sparkling, and has a peculiar pleasant flavor of its own. To hasten fermentation, the sugar may be previously interverted by ebullition with a small quantity of citric acid. Prepared in this manner, kephir contains about two per cent., by volume, of alcohol.

A curious incident, which took place at a recent meeting of the Belgian Academy of Medicine, shows the *utter disuse of bleeding* by modern practitioners. Dr. Willems related before the Academy that, a short time since, having been called in consultation with a younger brother physician, he suggested to bleed the patient, when his *confrère* declared he was quite unable to perform the operation, as he never had seen it practised in hospitals. Dr. Willems's statement astonished another academician, who expressed some incredulity as to such a state of affairs. "Well," said Dr. Willems, "I have no reason for concealing the name of the physician in question. It

is Dr. Van Bellighen, a graduate of the Ghent University."

Tanacetic rabies is a new name proposed by Dr. Peyraud, a consulting physician at the Vichy springs. Having observed the effects of oil of tansy (*tanacetum vulgare*) on rabbits and other animals, and noticed the similarity of the symptoms with those of true rabies, he considers the foregoing appellation an appropriate one to designate the singular disease artificially produced. When two drops of oil of tansy are injected into the veins of a medium-sized rabbit, the animal, after twenty seconds, is taken with convulsions, and presents a series of symptoms, the most characteristic of which are violently biting any object offered, and exacerbation of the fit when a mirror is turned towards its face. There is also an unnatural appetite, and the mouth, œsophagus, and stomach are found full of bits of straw. Two birds, having been exposed to the vapors of oil of tansy, had, one a fit of biting rabies, and the other a fit of paralytic rabies. Other animals were experimented with, and with similar results. But, not to enter into lengthy particulars about anatomical examinations, etc., suffice it to say that the symptoms, taken altogether, are not of the epileptic but of the tetanic type, most especially the rabic variety. The chief difference is, that the disease cannot be inoculated. From oil of wormwood and Japan camphor oil of tansy differs by its stopping the glyco-genic function of the liver. Another contrast is with bromide of potassium, which prevents the convulsions caused by wormwood and camphor, but is ineffectual with tansy. Dr. Peyraud's observations were presented to both the Academy of Sciences and the Academy of Medicine. At the first they passed without remark. But at the Academy of Medicine (October 18), Dr. Colin, a professor at the Alfort Veterinary School and a member of the Academy, objected to the application of the name rabies to the series of accidents brought on by tansy, adding that many therapeutic agents can produce symptoms similar to those of the rabic virus, and yet no one so far has thought of calling them rabic symptoms. "I see no reason," he said, "to change this way of doing. I gave dogs Hoang-nan, and observed therefrom a paralysis comparable to that of paralytic rabies, yet I was careful not to say the case was one of Hoang-nan rabies." Whatever may be thought of Dr. Peyraud's proposed name, his discovery must be admitted to have some importance at present when such bitter discus-

sion is raging, because it shows there are substances producing in animals symptoms that much resemble hydrophobic rabies.

PARIS, October 21, 1887.

THE DANGERS OF ANTIFEBRIN.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—In answer to Dr. Winnett's question in your last issue, permit me to say that I have several times witnessed cyanosis produced in women patients by three or four $\frac{1}{4}$ -gramme doses of antifebrin. Have not seen it act so on men. Probably the nervous and circulatory systems of the latter can better resist the depressing effects of this drug.

F. M. BAUER.

220 EAST EIGHTY-SIXTH STREET, NEW YORK,
October 6, 1887.

Notes and Queries.

PEROXIDE OF HYDROGEN.

We have received the following from an occasional correspondent:

"This is comparatively a new remedy, but a most active one. The H_2O_2 is the most positive antiputrefactive agent known; it should head the list of all others in arresting septic processes, both constitutional and local. According to good authority by comparative tests made, it is sixty times more potent as an antiseptic than carbolic acid, twenty times that of salicylic acid, and forty times more than sol. bichlo. mercury. These statements may seem to be exaggerations, but my experience with the remedy, after testing it in a variety of diseases of a septic character, only confirms the statements made by others. In diphtheria its dissolving (oxidizing) effect on the exudations is wonderful. Applied locally to the membrane in the throat this is removed in a few hours, and all the fetor destroyed and the mouth and throat rendered *aseptic*. Administered by inhalation and taken into the stomach, it destroys sepsis, vitalizes the blood by giving off oxygen to it, reduces high temperature, keeps intact the strength of the nervous system,—a want which frequently causes death by heart-failure. In this class of diseases the H_2O_2 can be administered with other indicated remedies.

"If a decomposed egg be mixed with a small quantity of a fifteen-volume solution of H_2O_2 , an active effervescence will take place, and the odor of the sulphuretted hydrogen be at once dispelled; when brought in con-

tact with pus or putrid meat the same active effervescence will be observed, and the odor will be instantly destroyed.' My experience with it shows that it promptly disinfects all forms of putrid excreta and destroys at the same time all septic germs. The foulest and most putrid cavities it renders *aseptic* and entirely void of unpleasant odor. It is adapted to the syphilitic as well as the simple ulcer. When applied to a foul sloughing ulcer, a sluggish wound, or to an oozing carbuncle or open felon, not only is the pus destroyed but the sore is thoroughly cleansed and rendered *aseptic*. 'It is the most powerful antiputrid application known. Observed under a microscope, the rapidity and thoroughness with which H_2O_2 acts upon pus-corpuscles and bacilli is clearly seen. The corpuscles at once lose their spherical form, shrink, assume a concentric shape, and become heaped up as a mass of detritus, and in a few seconds the bacilli are transformed into a dead mass.' Its range of applicability is a wide one. I have used it in dressing wounds with better results than any other remedy. In fact, I have often been surprised to see some lacerated wounds heal (almost) by first intention under a three- or four-volume solution of the peroxide of hydrogen. In typhoid, scarlet, and other fevers it is a *sine qua non*, which should be administered both internally and applied externally as a wash to cleanse the skin of all septic matter, which is an active factor in rendering the fever continuous and malignant in type, etc.

"I have jotted down these thoughts that the members of the medical profession might become more intimately acquainted with this *most* active remedy. For I am led to believe that but few members of our profession know anything of the great curative properties of the peroxide of hydrogen. And for the want of this knowledge the remedy is left in the hands of charlatans to compete with scientific men in the profession whose remedies are less potent and efficient than this. Hence the advantage the quack has over the scientific physician."

EPHEDRINE.

Chlorhydrate of ephedrine is a new mydriatic alkaloid obtained from *Ephedra vulgaris* by M. KINROSSUKE MINRA. It has to be employed in a solution ten times more concentrated than homatropine, but it is much less costly. It does not paralyze the accommodation for near vision.—*Lancet*, October 15, 1887.

SYNTHESIS OF PILOCARPINE.

MESSRS. HARDY AND CALMELS have announced (*Compt. Rend.*) the success of their efforts to prepare a second natural alkaloid by synthesis. As a starting-point the authors used "*b*-pyridino *a*-lactic acid," a derivative of pyridine which had previously been recognized among the decomposition products of pilocarpine and described by them. The first stage was the conversion of this compound into pilocarpidine. To effect this it was treated with hydrobromic acid and gold chloride, by which the lactic acid was reduced to propionic acid, and a bromoauric compound of *b*-pyridino *a*-propionic acid obtained. This was decomposed with hydrogen sulphide, and the syrupy acid set free was heated in a sealed tube with a solution of trimethylamine. The contents of the tube were afterwards brought to dryness, and the residue treated with aqueous solution of potassium carbonate, when oily drops separated that proved to consist of pilocarpidine. The conversion of pilocarpidine into pilocarpine was eventually attained by oxidizing an iodomethylate of pilocarpidine with silver permanganate, the products being formic acid and pilocarpine. From physiological experiments made on dogs with the synthetic compound its action appears to be identical with that of the natural alkaloid.—*Druggists Circular and Chemical Gazette*, October, 1887.

THE PHARMACOLOGY AND THERAPEUTICS OF METHYLAL.

We add the following to what we have already published as to the action of methylal.

M. PERSONALI, of the Pharmacological Laboratory of Turin, published a note on the pharmacology of methylal in the *Giornale della real Accademia di Medicina di Torino*, 1886, page 295, in which he showed that methylal administered by subcutaneous injection, introduced into the stomach, or inhaled, has a sensible hypnotic action upon various animals—frogs, rabbits, pigeons, white mice, guinea-pigs, and dogs—in doses varying from 1 to 5 grammes per kilogramme of the weight of the animal. He described the sleep induced as profound; the reflexes were abolished, and there was a diminution in the frequency but an augmentation in the amplitude of the respiratory movements; the heart acted more rapidly, and there was a fall in blood-pressure; the temperature was lowered and the activity of the nutritive process was lessened. He then proceeded to study the an-

tagonism of methylal to strychnine, and by its employment succeeded in suspending the tetanic convulsions and saving the life of an animal poisoned by strychnine. He found that methylal acted promptly, was rapidly eliminated, caused no appreciable disturbance, and fulfilled most of the conditions required in a hypnotic.

MM. Mairet and Combemale have continued M. Personali's investigations as to the physiological action of methylal, and have studied also its therapeutic application in mental disorders. The experiments performed on different animals by subcutaneous injection, by ingestion (into the stomach), and by inhalation gave the following results. The hypodermic injection of methylal caused extreme pain, and might even produce syncope; injected pure, it might lead to ulceration; when doses of from 25 centigrammes to 50 centigrammes per kilogramme of the weight of the body were used, slight salivation occurred; and from a quarter of an hour to an hour after the injection, the animal lay down and slept. The sleep was calm, but the animal remained sensible to external excitants, though the reactions were slow. When the dose reached 50 centigrammes per kilogramme of the weight of the body, the sleep was deeper, and required a much more powerful excitant to interrupt it. The animal could thus sleep several hours; on awakening it was heavy and lazy, but soon recovered. Between 50 and 70 centigrammes per kilogramme of body-weight, sleep was overpowering, the animal fell asleep eating or in the midst of its natural enemies, and an intense peripheric excitant was required to obtain even slow and feeble reactions. Other phenomena also appeared; the pupils were dilated and the muscular fatigue approached nearly to paresis, so that the animal jumped with difficulty and could not hold up; there was a high pulse at the outset and very marked salivation; these symptoms disappeared after several hours, and then sleep persisted along with the characters given above; at this period a slight lowering of the temperature occurred. After injecting more than 2 grammes per kilogramme of body-weight, two distinct phases of intoxication were produced; in the first depression with somnolence; paralysis, first of the hind-quarters, then becoming progressively general; hyper-excitability of the muscles and sometimes spontaneous convulsive spasms of the limbs; general and sensorial sensibility was retarded and diminished; the pupils were dilated; there was lowering

of the temperature; the frequency of the pulse was slightly augmented and respiration was difficult and intermittent; the hairs were erected. Two or three hours after the commencement of the experiment the second phase appeared; paresis disappeared or became much diminished, the other symptoms improved, and the animal lay in an ordinary sleep. On awakening, the secretion of urine, which had been suspended, was resumed, the animal remained depressed and without initiative, it had no appetite, lost flesh, and required several days to recover. With these large doses the gravity of the symptoms varied according to the resistance of the animal, and death might ensue; a guinea-pig succumbed after receiving an injection of 2.35 grains of methylal per kilogramme of its weight. The necropsy showed a general congestion of the brain and medulla, punctiform hemorrhages in the pulmonary parenchyma and in the myocardium, a marbled appearance of the liver, and congestion of the cortical substance of the kidney.

Introduced into the stomach methylal produced the same effects, and sleep was induced by the same doses but not so quickly; it did not take place until two or three hours after absorption, and lasted somewhat longer.

When the drug was administered by inhalation, the animals showed the same symptoms, but when the dose was large, irritation of the mucous membrane of the eyes, nose, and bronchial tubes ensued, causing a flow of tears, sneezing, and cough.

These experiments appear to show that the general effects produced by methylal are essentially the same, whatever mode of introduction be adopted, but that sleep is somewhat more persistent when it is introduced directly into the stomach. The effects on different animals were the same, but the higher the animal ranked in the scale of beings, the more decided was the hypnotic action; thus one-half the dose necessary to cause sleep in a dog or a cat sufficed to induce it in a monkey; guinea-pigs did not actually sleep, but were only drowsy. Lastly, it would seem that the elimination of methylal is very rapid, particularly by the lungs. To sum up, although powerful doses of methylal produced toxic effects, going on even to death, the principal action of this substance in comparatively weak doses is to induce sleep, the doses required being from 25 to 50 centigrammes per kilogramme of the weight of the animal. Methylal therefore is a hypnotic which is rapidly eliminated, leaves no ill effects after awaken-

ing; does not accumulate in the system, and has but little toxicity unless taken in large doses.

MM. Mairet and Combemale have also studied the therapeutic action of methylal upon persons affected with mental alienation of different forms; their results are embodied in a note read to the Académie des Sciences on April 24, 1887. The sweet taste and ethereal odor of methylal and its solubility in water render its administration easy; it was given in an ordinary julep. Doses of from 1 to 8 grammes never caused gastric or other disturbance, but it was remarked that those patients who now and then wetted their bed did so regularly while taking methylal. It was always administered by the mouth, and in one dose at bedtime.

The drug was given to fifteen patients suffering from mania and lypemania; to twelve cases of simple dementia consecutive to functional mental alienation; to three cases of delirium tremens; to three cases of dementia; and to seven cases of paralytic dementia. In many of these cases other hypnotics had been tried, so that comparisons could be instituted.

At the outset of simple mania methylal appeared to have no hypnotic action, although the dose was raised to 7 and 8 grammes; at the stage of complete development, during acute crises of violence, methylal in doses of from 5 to 6 grammes succeeded, on the contrary, in procuring during the first days a sound sleep, lasting all night. The sleep, generally continuous, was in some cases interrupted for a quarter to half an hour, but was afterwards resumed until morning. This result was obtained even in cases of extreme violence, but it was necessary to increase the dose. The action diminished slightly when the system became accustomed to the hypnotic, but on interrupting the medication for two or three days, methylal again produced the same results as in the earlier doses. In simple dementia consecutive to functional mental disturbance, the effects of methylal were uniformly favorable, no matter what the degree of agitation of the patient, if the doses were sufficiently high, 5 and even 8 grammes had to be given. In two cases only was there no good result, and in one of these cases the patient was refractory to all hypnotics; the other patient had cardiac disease, and was influenced only by digitaline. It was necessary in these cases also to increase the dose when the system became habituated to the hypnotic. There were three cases of alcoholic mania, in two of which methylal was entirely without

effect, or had but a slight effect. In the cases of dementia the hypnotic in moderate doses (3, 4, to 5 grammes) produced good effects during the first five or six days; afterwards the sleep was less persistent, and lasted only from five to six hours, even when the dose was augmented. Among the seven cases of paralytic dementia, two were refractory, the first took at first 5 grammes, and later on 8 grammes, and slept three hours only, then three, four, and five hours, but continued talking. All other hypnotics had equally failed. The second case was syphilitic. No effects whatever were produced, even by a dose of 7 grammes. The other cases obtained quiet and sleep to a satisfactory degree, no matter what stage of the malady had been reached. In these cases there appeared no signs of the system becoming habituated to the hypnotic, which continued to be given in the same doses (5 to 8 grammes) for eight days running.

To sum up, methylal, without effect in alcoholic mania and at the outset of simple mania, succeeds pretty generally in all other cases, but it is necessary sometimes to augment the dose when the system becomes habituated to it, or to interrupt its administration for two or three days. It is important to note that the action of methylal is purely somniferous. Its impression on the brain is evidently temporary, and it causes no depression. It causes no disturbance of the nervous or nutritive systems. It is certainly destined to render good service in therapeutics.—*Brit. Med. Journ.*, October 22, 1887.

PHOTOXYLIN.

In a previous issue we alluded to the use of photoxylin as a substitute for collodion. Since then we have received a number of queries as to what this substance is, how it is prepared, and where obtainable. The United States shipping laws prohibit the importation of this substance, which is practically gun-cotton, on vessels carrying passengers. DR. ELMER, of New York, however, publishes in the *American Druggist* for November, 1887, the following formula for its preparation:

Mann, of St. Petersburg, prepared his gun-cotton with sulphuric acid of but moderate strength. He took thirty-one per cent. of sulphuric acid of 1.830 to 1.835 sp. gr., twenty per cent. of nitrate of potash, and immersed the cotton in the mixture when 50° C., digesting it for twenty-four hours at 28°

to 31° C. The time of digesting can be extended to five or six days. When the temperature is kept at 50°, one hour will suffice.

A mixture of thirty-three per cent. of sulphuric acid of 1.80 sp. gr. and ten per cent. of nitrate of potash gave also good results.

Chili saltpetre (nitrate of soda) crystallizes easily in the mixture, and will not do on that account.

A NEW PEPTONE FOR SUBCUTANEOUS INJECTION.

Hitherto attempts to use peptone hypodermically had failed on account of the difference of composition which existed between their composition and that of the blood. It occurred, therefore, to M. Reynard (*London Med. Record*, October 15, 1887) to convert blood serum itself into peptone. He recommends the following formula: Pure serum albumen, 5 grammes; dialyzed pepsin, 75 centigrammes; distilled water, 75 grammes; and 19 drops of pure hydrochloric acid; the mixture to be kept at a temperature of 46° C. for three times twenty-four hours. At the end of this time the liquid product is clear, and does not precipitate on the addition of ferrocyanide acidulated with acetic acid. When purified by dialysis and concentrated, it is spread on glass, and evaporated to dryness on a water-bath. This peptone, peptonized by alcohol, is well borne when administered by hypodermic injection, and gives rise to no irritation.

THE *Western Pennsylvania Medical College* at Pittsburg began its second annual regular course on Tuesday, September 27, with a class of near one hundred.

The introductory address was delivered by the secretary of the faculty, Prof. W. J. Asdale.

Dr. Asdale congratulated the class that they entered as students of medicine at an auspicious time, that the *science* of medicine was rapidly developing, that grand and great achievements were promised in the near future, that a new pathology was being created on an endurable basis, and a new therapeutics is to be formulated.

This college requires an entrance examination, and provides a three years' graded course.

Its success has been unexampled.

POISONING BY CARBOLIZED COTTON-WOOL.

In a recent clinical lecture at the Hôpital des Enfants Malades, M. SIMON (*London Med. Record*, October 15, 1887) described an interesting case of acute poisoning by carbolized cotton-wool in a female child, aged 22 months, and also gave some useful hints as to the differential diagnosis of aphthous sore mouth, angina, scarlatina, and diphtheria. On February 6, M. Simon was called in consultation to examine a little girl, aged 22 months, who had, the evening before, presented a series of nervous symptoms (prostration, vomitings, cold extremities). The patient had been affected with submaxillary adenitis, and tincture of iodine had been applied. The tincture being very much concentrated, an ulceration of five to six centimetres in length was the result of its application. The family doctor was now called in, and iodoform gauze and carbolized cotton-wool was applied to the ulceration. The first dressing was made on February 3. The next morning the wound presented a much better appearance, but the general state of the patient left much to be desired. The mouth was dry, tears flowed, and there was evident coryza. The child was very excitable, and complained of pains in the head. Temperature, 38.8° C. (101.8° F.). Pulse frequent. On February 5 the child was taken with vomiting, which medication failed to arrest. The face became pale and the extremities cold, while the temperature rose to 39.6° C. (103° F.); prostration was extreme, and the flow of urine suppressed. The use of the carbolized cotton-wool was abandoned, the patient recovering entirely from the toxic symptoms at the end of thirty-six hours. Specimens of the urine passed during the attack, and which were as black as ink, did not give the characteristic blue color when treated with nitric acid and starch, making it evident that the iodine had played no part in the intoxication. According to M. Simon, the elimination of the urine having been arrested at the first moment, the carbolic acid was accumulated in the nervous centres, and afterwards came away, on the suppression of the carbolized dressing, in the black urine characteristic of the poison. Considering the great susceptibility of children to the toxic action of carbolic acid, M. Simon thinks that this medication should never be used in children under two years of age. M. Simon then proceeded to describe the signs by means of which a differential diagnosis may be made between aphthous sore mouth,

angina, scarlatina, and diphtheria. The presence of a rough elevated product, the outer edges of which are not sharply cut, like that of a watch-glass set in metal, indicates aphthous sore mouth; whereas in diphtheria the patch is smooth, flat, and depressed, surrounded by a raised mucous membrane forming a distinct outline. In scarlatina the tonsils present patches of thick matter of unequal size, elevated, well defined, and without tendency to spread, being confined to the natural depressions of the organ.

ACACIA DELIBRATA.

A Brisbane plant which DR. BANCROFT has examined is *Acacia delibrata*, in the pods of which he has found a saponin. Physiologically it was found to act as an irritant poison. It has a very disagreeable taste, and is soluble both in alcohol and in water.—*Australian Journal of Pharmacy*, p. 104; *Pharmaceutical Journal and Transactions*, October 1, 1887.

A CORRESPONDENT sends us the following, which will point to the need of some registration law in Missouri:

"The accompanying slip will give your readers, if you see fit to publish it, an idea of the class of men we have to contend with in the practice of medicine in Missouri. It was in the case of an old lady, aged 62, whom the "doctor" had been treating for pneumonia for a week, when they decided to discharge him. The following is a fac-simile of the memorandum he left for his successor, which, unfortunately, happened to be the writer:

Dr
I Prepared fever dro. Ver Verie 10 gt
Aconite 5 "
Syrup for Lungs Tareter 3me
Capicum
Acue
Shugar
for the Pouls 'Leptendrin
a smale Ipca
powder Capicum
at Night Rehubarb
oil & turpentine for the Bouls
& a smale dose of oil & turpentine ever 3 hours
P. J. Jack M.D.

"As might be expected, the woman was in a dying condition and passed away within a few hours.

"Such cases serve to show the results of a law that allows such ignoramuses to degrade the profession."

— T H E — Therapeutic Gazette.

Whole Series,
Vol. XI.

DETROIT, MICH.,
PHILADELPHIA, PA.,

December 15, 1887.

Third Series,
Vol. III. No. 12.

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Original Communications.

HYGIENIC THERAPEUTICS—A LECTURE ON HYDROTHERAPY.*

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GENTLEMEN:—I intend to devote to hydrotherapy four lectures. In the first I shall give the history of hydrotherapy; in the second I shall study its physiological effects and methods of application; in the third I shall examine the benefits which we are warranted to expect from it in the treatment

of chronic diseases; in the fourth and last I shall take up one of the most disputed points of hydrotherapy,—I refer to the application of cold water to acute febrile diseases.

I.

HISTORY OF HYDROTHERAPY.

Like kinesitherapy and massotherapy, hydrotherapy dates from the earliest history of all nations. Primitive tribes have always practised some mode of water-cure in their attempt to deal with the problem of disease. We see, even to-day, savage people living like the prehistoric man in the Stone Age, and using cold water as a means of cure in sickness. Thus it is with remedial intent that the native women of the Fiji Islands precipitate

* From advance sheets. An abstract of two lectures delivered in Cochin Hospital. Translated by E. P. Hurd, M.D.

themselves into the sea immediately after their confinement.

The popular traditional belief that bathing in cold water removes all impurities of the body has been transmitted from age to age, and has always taken a religious shape. What is the practice of the Hindoo who regularly dips himself in the sacred waters of the Ganges or the sacred lakes which surround his temples, what are the baths of purification ordered by the law of Moses and the Talmud, and the ablutions required by the Mohammedan religion, but examples of this early traditional belief?

In the history of the Greek nation we find also traces of these popular traditions in the earliest or mythical period of this history. Thus we read that Melanapus cured the three daughters of Proetus, king of Argos, by dipping them in the water of Anigrus after a march of ten leagues. The temples of Hercules, where the sick sought restoration and invigoration by immersions in cold water, represented this popular notion as to the efficacy of cold water. But we must come down to the time of the priest-physicians the Asclepiadæ, and in particular to Hippocrates, the father of medicine, before we find any distinct scientific teaching as to the physiological action of water, and you will find in the treatise of the latter on "*Air, Water, and Places*," in that on the "*Usage of Liquids*," and in the chapter on "*Diet and Regimen*," precise indications as to the employment of water in therapeutics.

But it was in the Roman period that the two founders of hydrotherapy—Musa and Charmis—appeared. Musa, like all the Roman physicians, was of Greek origin; physician to Augustus, he rendered himself famous by curing his imperial patron of a disease of the liver by cold baths, of which we have the following account in Suetonius: "During the whole course of his life he (Augustus) suffered at times dangerous fits of sickness, especially after the conquest of Cantabria, when, his liver being injured by a defluxion upon it, he was reduced to such a condition that he was obliged to undergo a desperate and doubtful mode of cure; for warm applications having no effect, Antonius Musa directed those that were cold."*

Augustus recompensed his physician munificently, and, besides a considerable sum of money, he presented him with a gold ring which conferred on him the order of knighthood, and he erected statues in his honor.

The method of Musa consisted in affusions of cold water after the use of warm baths and vapor-baths. Horace, in accordance with the advice of Musa, abandoned the warm baths of Baia for the cold-water douches and affusions of Clusium. There has been a long dispute as to whether Marcellus, also treated by Musa, owed his death to cold-water treatment; but it was Charmis who was the most rigorous and relentless in the application of hydrotherapy. Charmis was born at Marseilles, but he practised at Rome, and Pliny has given us the picture of Roman senators shivering under the influence of the cold baths which Charmis had ordered them to take. If Charmis was very severe in the application of his method, he showed himself, according to Pliny, to be very greedy of money: he exacted two hundred thousand sesterces (more than eight thousand dollars) as a fee from a patient who came from a distant province in order to consult him. Charmis, as well as Musa, lived in the first century of the Christian era.

The hydrotherapeutic practices excogitated by Musa and carried to excess by Charmis gave rise to protestations and widely dissentient opinions, and one hundred and fifty years later Galen left on record a summary of all these disputes by the numerous divisions which he established among the opponents and partisans of hydrotherapy. According to the physician of Pergamos, the practitioners of his time were divided into *hydrophiloï* and *hydrophoboi*. The *hydrophiloï* were subdivided into *psychrophiloï*, advocates of cold water, and *thermophiloi*, advocates of warm water. The first, the *psychrophiloï*, admitted three subdivisions,—the *psychrolites*, partisans of cold baths, the *psychropotes*, partisans of warm baths, and *psychropantes*, partisans of both modes of administration. Galen, moreover, was an advocate of cold baths, but he condemns their excess. He insists on the benefit which may be derived from cold water as a drink in fevers, and recommends ablutions of cold water to the head while the rest of the body is immersed in warm water.

Cœlius Aurelianus, who lived, or is believed to have lived, in the fourth century of our era, also indicates a new mode of employment of cold water,—namely, the application of sponges wrung out of cold water to

* "Destillationibus jecinore vitiato, ad desperationem redactus, contrariam et ancipitem rationem medendi necessario subiit, quia calida fomenta non proderant, frigidis curari coactus; auctore Antonio Musa" (Suetonius, "Vita Cæsaris-Augusti").

the stomach of melancholic patients. We have seen this practice revived in our day.

There are also in Aetius and in Alexander of Tralles, passages proving that these physicians made use of lotions and affusions of cold water in fevers. I may here remark that you will find in the voluminous compilation of Oribasus, which I have many times cited, all the usages of antiquity pertaining to cold baths.

Then came the epoch of the Middle Ages, and, as it was with all that pertained to the arts and sciences, everything came to a standstill, during this period of barbarism, for a thousand years, and we are obliged to come down to the middle of the sixteenth century before we find any further indications of hydrotherapeutic practices applied to the treatment of diseases.

It is a singular circumstance that the Arabian school of medicine, which, during this period of the Middle Ages, kept the ancient tradition, and upon which the religion of Mohammed rendered obligatory repeated ablutions with cold water, did not enforce these ablutions as a part of medical practice. Rhazes alone counselled cold baths, and this as a part of the treatment for smallpox. Rhazes, whose true name was Bou-Bekr-Mohammed-Ben-Zakarya-Errazy, besides cold baths in smallpox, ordered astringent baths and cold drinks for metrorrhagia, and iced rose-water for burns.

In the sixteenth century—that is to say, at the epoch of the Renaissance—the medical world was but little interested in the subject of cold-water treatment. At the same time, I ought to mention that in Italy, Mercurialis, the restorer of the gymnastic art, did not overlook the importance of cold affusions in febrile maladies, and in Spain, Nicolas Mor-danus dwelt at length on the usage of cold water and of snow in sickness. In France, Ambroise Paré applied cold water to surgery, and showed the benefits that may be derived from irrigation in the treatment of wounds.

But we must come down to the seventeenth century, and to the end of this century (1699), in order to find all these scattered notions as to the advantages of cold water summed up in a work entirely devoted to hydrotherapy, and it is an English physician, Floyer, who was the author of this treatise.* Floyer established at Litchfield, where he was practising medicine, the first institution for hy-

drotherapy, which consisted simply of two contiguous apartments. In the one sweating was obtained by wrapping the patient in warm blankets, in the other applications of cold water were made.

In the eighteenth century all these ideas as to the employment of cold water took more definite shape, and this whole question of the water treatment of disease began to be agitated among physicians. It was in Italy that the chief interest in the subject seemed to centre, and much excitement prevailed among the partisans and opponents of cold-water treatment, which a historian of the period characterizes in these words: "All Italy is crazy on the subject of cold water." This practice was brought into Italy by two Spanish monks, who ordered, in the treatment of diseases, the free drinking of ice-water (from six to forty glasses a day) and frictions with ice.

In Germany the Hahn family laid the foundation of hydrotherapy. The father of the Hahns, Sigismund Hahn, who was born at Schweidnitz, in that same Silesia which at a later day gave birth to Priessnitz, was an earnest advocate of cold water both internally and externally; but it was especially his son, Johann Sigismund, who in a manner laid down the principles of hydrotherapy, in a work which he published in 1743. He not only applied cold water to the treatment of chronic disorders, but also to acute affections and to exanthematic fevers, and in particular to smallpox, measles, and erysipelas.

His brother, Gottfried von Hahn, who practised at Breslau, and who was raised to the rank of nobility by the king of Prussia in 1717, did much less for hydrotherapy than his brother, and has left on record only the results of his practice.

At the same period appeared the first work in Russia on the usage of cold water, which the Russian people from time immemorial had made use of in sickness, and we owe this work to Samoilowitz, physician to the empress, Catherine II., who employed with success ice-water lotions in the treatment of the plague which raged at Moscow in 1771.

France did not remain idle in this scientific movement which led physicians to use cold water as a therapeutic agency. The surgeons, reviving the practice of Ambroise Paré, counselled the use of cold water in the treatment of wounds; and Récolin, Pibrac, De la Martinière, Louis, Poutier, Mopelier, Champeaux, Chambon, followed the example of Lamorier, of Montpellier, and Guérin, of Bordeaux, who,

* Floyer, "An Inquiry into the Right Use of Baths." London, 1699.

in 1732, vaunted the good effects of constant irrigation in the treatment of wounds. Three military surgeons—Lombard, Percy, and Larrey—made this a part of current practice in the treatment of wounds by fire-arms.

But the most ardent and vehement advocate of hydrotherapy was Pomme. All diseases of the nervous system were to him vaporous affections, and all were tributary to a uniform treatment, which consisted in immersing the patients for six, twelve, and sometimes twenty-four hours in water, kept at a constant low temperature of 10° C. [50° F.] by adding ice. According to Pomme, all vaporous maladies depend on "relaxation" or shrivelling of the nerves, and are to be combated by aqueous infiltration of those nerves, which swells them out again to their normal dimensions. Pomme, besides cold baths, subjected his patients to a debilitating regimen, giving them nothing but milk, barley-water, and chicken-broth.

But we must turn again to England if we would find a more rational and practical impulse given to hydrotherapy, and we owe this progress to Currie. Currie had a predecessor in this scientific movement by the name of Wright, who, in a voyage from Jamaica to England, had observed in his own person the good effects of cold-water applications during an attack of pernicious fever; he got well under the use of douches of sea-water, three painful at a time, and he thereafter applied these ablutions of cold water to the treatment of fevers, and typhus in particular, and published, in 1797, the results of his observations.*

Currie, who practised in Liverpool, profiting by the experience of Wright, put his typhus fever patients upon cold-water treatment, and reported a hundred and fifty-three cases in which the recovery seemed to be due to the plentiful use of cold water. He employed affusions of sea-water or salt and water.

But where Currie showed himself superior to all his predecessors was in the fact that he laid down the principles of the physiological action of cold water in the febrile process, and he made the first physiological experiments to determine how cold water acts in health and in sickness. In order to give more precision to his observations, he made use of the thermometer, which he placed either in the mouth or in the armpit of pa-

tients, employing for this purpose a very sensitive instrument, graded much like those of the present day, so that he at the same time established the basis of hydrotherapy, and was the creator of clinical thermometry.†

The work of Currie is the most important and the most scientific work of the epoch on hydrotherapy, and on many points later researches have in no way diminished the value of the observations made by the English physician. In his writings, in which on every page he shows the benefits which may be derived from the employment of cold affusions in the treatment of febrile affections, Currie complains of the very meagre results which had attended his efforts to inculcate therapeutic methods of the utmost advantage to humanity. Currie was fully justified by subsequent events in giving expression to this lamentation, for his contributions to medical progress were destined to be so completely ignored that more than thirty years after his death the discovery of hydrotherapy was attributed to the empiric, Priessnitz.

All these facts, then, had passed into oblivion, and the important labors of Currie, to whom indisputably belongs the honor of having established hydrotherapy on an experimental and scientific basis, had been without fruit, when at the beginning of the nineteenth century Priessnitz appeared; and what could not be accomplished by the efforts of the most celebrated physicians for eighteen centuries—from Musa and Charmis down to Currie—a humble peasant and farmer effected. From this moment, hydrotherapy found its proper place in medical practice, and so universally since then have the principles of this mode of treatment spread, that at the present time there is scarcely a physician in the wide world who does not daily have recourse to practices of hydrotherapy. I know not, gentlemen, whether, like myself, you have ever been impressed with the melancholy fact, illustrated by the modern history of hydrotherapy, that it takes years of time and toil on the part of the leaders in medicine before any progressive movement of great sanitary and therapeutic importance is duly recognized by the profession at large, and one has often occasion to remark how difficult a task it is, and how much combined individual effort it takes, to overcome the apathy and indifference of the busy prac-

* Wright, "Medical Facts and Observations." London, 1797.

† Currie, "Medical Reports on the Effects of Cold Water as a Remedy in Febrile Maladies." Liverpool, 1797.

itioner or lead him to forsake the ruts of established routine.

But, before speaking of the "healer of Grafenberg" (as he is called), and of his hydrotherapeutic methods, I must mention a work which made a considerable stir at the commencement of this century. I refer to the treatise of Giannini on the "Treatment of Fevers by Cold Water," published in Milan in 1805. The Milan physician adopted the teachings of Currie, and treated fevers by cold water, but he substituted for the practice of Wright and Currie, which consisted of cold-water affusions, immersions in a cold bath, in which he kept his patients from ten to fifteen minutes at a time. Giannini applied this treatment to all fevers. Cold baths in intermittent fever combat the paroxysms, and in typhus keep the fever below the dangerous point; these were facts which Giannini had experimentally determined, and it may truly be said that in his application of cold baths to typhoid fever he was Brandt's predecessor by more than fifty years.

Vincent Priessnitz was born July 4, 1789, in one of the poor huts of the village of Grafenberg, which is situated at eighteen hundred metres of altitude, between Glatz and Neiss, near Friwaldau, in the mountains of Austrian Silesia.

Of an observing mind, long accustomed to make use of water both externally and internally in the treatment of sick animals placed under his care, Priessnitz had occasion to apply this mode of treatment to himself before prescribing it for any other human being. In 1816 he was thrown from a vicious horse, and suffered severe contusion of the left arm, besides two broken ribs. The surgeon whom he consulted declared that consolidation could not be obtained in the fractured ribs. Priessnitz, leaning his chest against the corner of a chair, and holding his breath, brought the broken fragments together, and had them maintained in position by a tight bandage, which he kept constantly wet with cold water, and consolidation was speedily effected.

Priessnitz attributed his recovery to this water treatment, and thereafter, accompanied by his cousin, Gaspard Priessnitz, roamed up and down the various country places of Silesia, treating by these same methods sprains, fractures, and all sorts of wounds and injuries in men and animals.

The success which attended this treatment made a great stir, and the reputation of Priessnitz was established. The hardy mountaineers, mind you, did not attribute to the water

treatment the brilliant results which Priessnitz had obtained, but ascribed them to sorcery, while the physicians and veterinary surgeons denounced him, and the priests heaped upon him their anathemas.

Then his practice increased, and his methods underwent improvements, and soon from all parts of Europe patients flocked to Priessnitz to be treated. To accommodate this itinerant *clientèle*, spacious hotels were constructed, which superseded the poor hovels of the village of Grafenberg. The Austrian government, astonished at the success which attended Priessnitz's hydropathic mode of treatment, appointed a medical commission to examine into its merits, and this commission reported favorably, recommending its adoption by the medical profession.

Loaded with honors and become immensely rich, Priessnitz did not, however, seem to enjoy his good fortune; he encumbered his hydrotherapeutic practices with odd and incomprehensible formulæ to keep away the physicians who came from every quarter to learn his methods; he kept himself more and more aloof, and died without leaving any writings, or a single pupil worthy of him.

Priessnitz was guided by very strange physiological and pathological notions, not being a physician, and having never studied medicine. In his estimation, the body was like a sponge, more or less thoroughly impregnated by diseased humors, and the plentiful application of cold water internally and externally tended to wash out these humors and rid the body of its impurities. His mode of treatment comprised several particulars, to which I shall briefly allude. These were all summed up in regimen, aeration, and the internal administration of cold water. He absolutely proscribed all condiments, with the exception of salt. He also insisted that all food should be taken cold. No alcoholic beverages were tolerated at Grafenberg; tea and coffee were also interdicted. As for exercise, Priessnitz made a great account of it, but he forbade ordinary gymnastic exercises as likely to exhaust or otherwise do harm, and recommended joinery instead.

"At Grafenberg," says Schedel, "all the patients are provided with a saw, a saw-horse, and an axe. Young as well as old are compelled to split wood."

As for the internal use of water, the patients were obliged to drink from ten to forty tumblerfuls a day. Before dinner they drank four to six glasses, and two after dinner; the rest was drunk between meals.

Before applying cold water externally, Priessnitz had recourse to sudation. To obtain sweating, he wrapped his patients in warm blankets, and, when they were covered with perspiration, the cold-water applications were made. These were varied. There was, first, the full bath, in which the patient was immersed; then there was the partial-bath, in which the patient was placed, and water was splashed over him (this was followed by rubbing); next in order came the foot-baths and sitz-baths; and, lastly, the cold, wet compresses and the wet sheets. Priessnitz made little use of douches, employing only the jet douche.

Such was the complex treatment employed by Priessnitz, and which his inventive genius was able to vary to such an extent; and you will see, by referring to the work of Scoutetten, that the patients under his care were occupied from four o'clock in the morning in summer, and five o'clock in winter, till ten o'clock at night, in carrying out the many rules and directions of the empiric of Grafenberg.

From this moment hydrotherapy became a part of current practice in the different countries of Europe. Baldau, in France, in 1840, studied the methods of Priessnitz, and founded the first hydrotherapeutic establishment at the castle of the Arcade; then Scoutetten, in 1843, made known Priessnitz's methods; still later, Schedel, in 1845, published his work on hydrotherapy; while Lubanski, in 1847, made known the results of his observations at the hydropathic institute which he had founded at Pont-à-Mousson.* Lastly, Paul Vidar founded the great establishment of Divonne, Macario that of Lyons, Bottentuit that of Rouen, and Delmas that of Bordeaux, and thus a number of the cities of France came to be provided with hydrotherapeutic establishments.

But the institution which was destined to give to hydrotherapy its most scientific character was assuredly that of Bellevue, directed by Fleury, who opposed to hydrotherapy of an empirical nature a rational water treatment, the precepts of which are set forth in his remarkable work entitled "A Practical and Rational Treatise on Hydrotherapy," the first edition of which appeared in 1852.

* Baldau, "Practical Instruction on Hydrotherapy," Paris, 1846; Scoutetten, "Water in its Hygienic and Medical Relations: a Treatise on Hydrotherapy," Paris, 1845; Schedel, "A Critical Examination of Hydrotherapy," Paris, 1845; Lubanski, "A Practical Study of Hydrotherapy," Paris, 1847.

Fleury endeavors to place rational hydrotherapeutics at the head of physiological therapeutics, and bases his practice on physiological experiments conducted with the utmost scientific rigor. He repudiates the employment of warm water and tempered water, and abandons sudations, at least in part; but, on the other hand, he multiplies the forms of douches, and considerably augments the arsenal of hydrotherapy.

Having finished the historical part of our subject, we come to the physiological effects and clinical applications. This will be the topic of the next lecture.

II.

PHYSIOLOGICAL EFFECTS AND MODES OF APPLICATION OF HYDROTHERAPY.

The physiological effects determined by the application of cold water have been the subject of numerous works these late years, and from these treatises I shall glean the materials for this lecture. I must allude in particular to the interesting researches made in France by Delmas, of Bordeaux, by Thermes and De Bottey, of Divonne; to those of Fredericq, of Liège, in Belgium; and especial attention should be called to the memoir of Scheuer, of Spa. I must also acknowledge my obligations to the splendid work of Winternitz, of Germany, and the numerous and fruitful experiments of Roehrig, of Rosbach, and of Fleischl.† I shall take these works as my guide in the brief survey which I shall here make of the physiological effects of hydrotherapy.

In this lecture I shall study only the action of cold water in its momentary effects on the cutaneous surface, leaving to one side the prolonged effects of this agent which constitute its antithermic action; this latter subject I shall take up in the last lecture on hydrotherapy, which will be devoted to the treatment of acute febrile maladies by cold water.

When cold water is applied for a brief space

† Delmas, "Physiologie nouvelle de l'Hydrothérapie," Paris, 1880; Bottey, "Études médicales sur l'Hydrothérapie," 1886; Thermes, "De l'Influence de l'Hydrothérapie sur le Nombre des Globules du Sang," Paris, 1878; Scheuer, "Essai sur l'Action physiologique et thérapeutique de l'Hydrothérapie," Paris, 1885; Winternitz, "Die Hydrotherapie auf physiologischer und klinischer Grundlage," Wien, 1880; Roehrig, "Die Physiologie der Haut experimentell und kritisch bearbeitet," Berlin, 1876; Rosbach, "Lehrbuch der physikalischen Heilmethoden," Berlin, 1882; Fleischl, "Untersuchungen über die Geetze der Nervenregung," Wien, 1878.

of time (by douches, plunges, baths) to the integument, it causes a train of symptoms which all of you have experienced when you have taken for the first time a cold plunge. Under the influence of the cold application, the individual experiences at first a sense of distress which is sometimes very painful. The beatings of the heart become irregular; the respiration is interrupted; there is a sensation of chilliness which extends over the surface of the whole body; the skin becomes pale, takes on a purplish hue, and there is a general shivering. Then, with the cessation of the action of the cold, these phenomena rapidly disappear; there is now a sense of general comfort, the circulation becomes more active, the respiration fuller, the skin reddens, the surface becomes warm, and there is a feeling of vigor and resistance which is very pronounced. It is to the sum of these phenomena that the name of *reaction* is given. Such are the symptoms of the cold-water application when it is of short duration.

But in order well to understand the physiological effects of the cold douche, it is necessary to examine each of these phenomena separately, and this is what we will now do, taking up successively the action of cold water on the circulation, on the respiration, on calorification, on innervation, and on nutrition.

Under the first head, we shall have to examine the action of cold water on the capillary and peripheral circulation, then its effects on the heart, and, finally, its action on the composition of the blood.

With respect to the capillary circulation, the action of cold when it is but transient is very perceptible; it constricts the calibre of the vessels of the cutaneous net-work, then, when the action of the cold has ceased, to the primary contraction succeeds a dilatation which is produced at the moment of reaction. But in order to obtain this active contraction and the subsequent dilatation, the action of the cold must be of very brief duration.

It is by the intermediation of the nervous system and by reflex action that this constriction of the capillary net-work is brought about; it is, in fact, due to a twofold cause, since we now admit vaso-constrictor as well as vaso-dilator nerves. The transient action of the cold energizes the functions of the vaso-constrictors and inhibits the vaso-dilators; at the moment of reaction the opposite effect is produced,—the vaso-dilators enter into play and the vaso-constrictors are inhibited.

This knowledge of the effect of cold on

the peripheral circulation is based on rigorous physiological experiments. I will touch rapidly on those of Naumann and Schüller, and shall dwell more particularly on those of François Franck.*

Naumann's experiments were made on the frog. Separating all the parts of the posterior extremity so that the limb remained attached to the body only by the sciatic nerve, he applied cold or mechanical irritation to the member thus detached, and observed under the microscope the effects thus produced on the mesenteric circulation. He then noticed that whenever the excitation was slight, or the action of the cold transient, there was a diminution in the capillary circulation, while, on the contrary, when the action of the cold was prolonged or too severely irritating, there was a dilatation of the vessels. This experiment is, as you see, one of great interest. It sets in clear light the rôle of the nervous system in the modifications undergone by the circulation when, for a longer or shorter space of time, cold is applied to the cutaneous surface.

Schüller experimented on the hare. He applied cold to the exterior by throwing a jet of cold water upon the belly and back of this animal; then he watched the effects produced on the pia mater, and observed, as before, that when the action of the cold was of little duration, there was a contraction of the capillary net-work, which gave place to a dilatation when the action of the cold had ceased.

But the experiments of François Franck have furnished us data of the greatest interest and value with regard to the peripheral circulation: first, because they were performed on man, and, secondly, because he made use of an apparatus which enabled him to determine with mathematical accuracy and even to enregister the modifications of the circulation.

François Franck,† in his experiments, employs an apparatus devised by Buisson, a sort of *plethysmograph*, which is a modification of the apparatus which Piégu first invented for studying the movements of expansion of the limbs. The hand of the subject is placed in a hermetically-closed vessel full of water; it is immovably fixed in this vessel, and the augmentation or decrease in size of the member causes a variation in the level of the liquid,

* Naumann, "Untersuchungen über die physiologischen Wirkungen der Hautreize;" Prager, *Vierteljahrsschrift*, Band 77; "Zur Lehre von den Reflex;" "Reizen und deren Wirkung;" *Pflüger's Archiv f. Physiologie*, v., 1872.

† Labors Undertaken in the Laboratory of Marey, 1878.

which is transmitted by a registering drum. When to the right forearm of the subject ice is applied, while the left hand is fixed in the enregistering apparatus, there is produced at the end of two or three seconds a diminution in the volume of the left hand; this shrinkage increases little by little, attains a certain point, then gradually disappears, and at the end of a minute the hand has regained its former volume.

By an attentive analysis of the phenomenon, François Franck shows that it does not result from any primary action of cold on the heart affecting secondarily the hand, but from a reflex act, having its starting-point in the impression of cold on the skin of the right forearm, its point of reflection in the spinal cord, and its destination the vascular nerves of the left hand. Mosso has repeated these experiments with the same apparatus, and has arrived at the same results. This experiment sets forth clearly the action of cold when applied momentarily to the skin, showing with what certainty this agent effects the diminution of the peripheral circulation.

Physiologists have gone even further in the prosecution of researches of this sort, and Winternitz has endeavored to ascertain by experiments, rigorously conducted, what are the points of the skin which have, above all, an elective action on the circulation of a determined vascular area. He has shown that the application of cold to the foot occasions chiefly a fall in the intercranial circulation; cold applied to the thighs, on the other hand, affects most the pulmonary circulation, while cold to the back influences in a marked manner the pituitary membrane. These are facts of the utmost importance, which we shall utilize hereafter when we come to study the applications of hydrotherapy to local diseases. Chapman has even gone so far as to take this elective action of different parts of the spinal cord on the vascularization of certain organs as the basis of a therapeutic method, which consists in applying along the vertebral column and over determined points bags of hot water or of ice. Allow me also to remind you that the experiments of Winternitz give sanction to the popular practice of arresting nose-bleed by applying some cold substance to the back.

The action of cold water on the heart is also a subject of great interest, and has given rise to numerous experiments to which I ought to allude before going any further. Roehrig has given especial attention to this subject. He experimented on the hare, and on applying mechanical irritants or cold to the ear of

the animal, examined the effects produced on the heart, and he has thus demonstrated that transient cutaneous excitations augment the beatings of the heart, while strong or very prolonged excitations diminish the number of pulsations.* The experiments of Winternitz and of Delmas are still more conclusive, as these two observers made man their subject. According to Winternitz, when cold is applied to a limited surface of the skin, there is an increase in the beatings of the heart, lasting three minutes, then a progressive decrease.

Delmas undertook in 1869 and 1870 researches and experiments characterized by still greater precision, showing by tracings all the modifications which supervene when a douche is administered. As soon as the cold water touches the body the heart is violently excited, and the pulse becomes irregular and precipitate. To this augmentation of pulsations succeeds a diminution below the normal, a diminution which takes place and is prolonged during the period of reaction. These facts, gentlemen, are of great importance. They show, first, what risk we run in subjecting to hydrotherapeutic treatment persons suffering from cardiac affections. These dangers are not imaginary, and cardiopathic patients have been known to die suddenly under the first effects of the douche. Therefore Priessnitz, who had on more than one occasion witnessed disastrous consequences of this kind, resolutely refused to submit to the douche patients who complained of palpitations or of cardiac or pulmonary oppression. Not being a physician, he did not distinguish anæmic patients from those laboring under real heart-disease,—a distinction of the highest importance, for hydrotherapy is interdicted to cardiac patients, while positively indicated in anæmia. This leads me to speak of the effects of cold water on the composition of the blood.

It is to Thermes that we owe investigations which have given us our knowledge of this subject.† Making use of the processes of numeration and calorimetry devised by Hayem, and which have given a rigorous precision to his studies, he has shown that cold water augments not only the number of the globules, but also their physiological value.

The action of the douche on respiration

* Roehrig, "Die Physiologie der Haut experimentell und kritisch Bearbeitet." Berlin, 1870.

† Thermes, "On the Immediate and Mediate Influence of Hydrotherapy on the Number of Red Globules of the Blood." Paris, 1878.

has been much less studied, and the results of experimenters are contradictory. Johnson affirms that under the influence of a cold shower-bath of one minute's duration, the number of inspirations augments from two to eight per minute. Pleniger also has observed the same increase. According to Delmas, there is sometimes increase, sometimes diminution in the number of respirations, and there is no precise rule. As for myself, I have often witnessed these phenomena of the respiration under the influence of the douche, and can affirm that at the commencement of the douche there is first arrest of the respiration, then several long inspirations succeed, and when the period of reaction is established, the respiratory movements are augmented in number and intensity.

Naturally, this double action of cold water on the circulation and on the respiration entails modifications in calorification. But these modifications under the influence of the douche are at first but slight, for while one experiences a severe sensation of cold while the water is being projected upon the body, and of general warmth when the action of the cold has ceased, the thermometer scarcely indicates a fall of two-tenths of a degree. But what is somewhat singular, during the period of reaction this fall of the temperature goes on, and is the more marked if the individual takes exercise, and may attain one degree C. (the mean is 0.6° to 0.8° C.), continuing for two hours after the douche.

The experiments which Delmas has made with extreme exactness as the basis of these data are accepted as conclusive by all physiologists, and show us once more that it will not do always to assume the sensations of heat and cold which we feel at the surface as really indicative of the temperature of the body. Does not the period of chill in intermittent fever coincide with an elevation of the temperature? It is the same with regard to the effects of hydrotherapy, and while during the period of reaction it seems to us that the heat of the body has considerably augmented, and that this augmentation increases with movement, this is not the case, and the thermometer gives, on the contrary, a decrease in the bodily temperature.

Bottey ("Medical Studies in Hydrotherapy," Paris, 1886), in some recent experiments made to elucidate this subject, has shown that this fall in the temperature depends on the duration of the douche and the temperature of the water. When the douche is very cold (8° C. for example) and of short duration

(two to three seconds), the depression of the temperature is preceded by a short period of elevation,—one- to two-tenths of a degree,—but when the douche exceeds ten seconds we come under the conditions determined by Delmas, and the depression of the temperature, which varies from four- to five-tenths of a degree, is prolonged for several hours without any momentary reactionary elevation.

Hydrotherapy has a marked action on the nervous system. The reflex phenomena determined by the impression of cold on the skin bring into play the nerve-cells of the spinal cord, and effect an equilibrium between the cerebral and spinal functions. Cold applications also modify the cerebro-rachidian circulation, and we shall see that, according to the mode of application of the cold water, we may obtain either effects of excitation and tonicities or of sedation and calm.

Acting on the general and partial circulation, augmenting the globular richness of the blood, modifying respiration and calorification, determining effects of an indisputable character on the cerebral and spinal functions, hydrotherapy influences, in all these ways, the general nutrition, which it notably enhances; and Scheuer* has insisted long and justly on this point. He shows that the blood, driven from the surface under the first effects of the douche, is forced into the different viscera, and in particular into the hæmatopoëtic organs, then that it returns to the periphery during the period of reaction, when the enhanced activity of the capillary circulation augments the chemical combustions there taking place. All our tissues, then, participate in the invigorating action of hydrotherapy, and you readily understand how it is that we have found in cold water, thus applied in a sudden and temporary manner to the surface of the body, one of the most powerful means for energizing the general nutrition.

We come now to the usual modes of application of cold water.

Hydrotherapeutic processes are extremely numerous, and in order to describe them in a clear and methodical manner I shall be obliged to establish numerous divisions. One of these has to do with the force and pressure of the water, and we shall have to examine the processes of hydrotherapy with

* Scheuer, "On the Physiological and Therapeutic Action of Hydrotherapy in Chloro-Anæmic States," Paris, 1885.

pressure—*i.e.*, douches and affusions—and processes where the water is applied without pressure. Another division is based on the temperature. In fact, we restrict hydrotherapy largely to the application of cold water, and you will see that all the degrees of temperature of water are utilized, from ice-cold to hot-vapor baths.

Let us begin, if you please, with the first division,—*i.e.*, water utilized under greater or less pressure. To this head belong affusions, and especially douches.

Affusions are but little used; this is the primitive method which Wright, more than a century ago, employed in the treatment of febrile affections. You see this method still put in practice at the seaside sanatoria. It consists in pouring, or projecting with more or less force, one or more pailfuls of water over the naked body of the patient.

As intermediate between the affusions and douches properly so called, we may mention the *swan's-neck douches* and the *surge douches* (*douches en col de cygne et douches en lame*). The *swan's-neck douche*, which derives its name from the form of the tube which conveys the water, projects upon the neck of the patient a great volume of water. In the *surge douches* a considerable mass of water is made to fall upon the patient, giving him the impression of an enormous billow.

Douches constitute the most essential part of hydrotherapy, at least in France; for we may, in this respect, establish a difference between the hydrotherapeutic practices of this country and those of Germany. Faithful to the practice of Priessnitz, Germany makes great use of partial baths, of wet wrappings, and frictions with wet cloths, while little account is made of the douche. In France, on the other hand, under the influence of Fleury, the douche has taken a preponderant part in hydrotherapy,—so much so that the words are, with us, almost synonymous.

Douches are divided into general and partial; the general are subdivided into fixed and mobile douches. This division is based, as you see, on the different modifications which are effected in the pipe which serves to administer these douches, the word *pipe* (*tuyau*) being, in Italian, *dossia*, from which we have derived the name of *douche*.

The fixed douches the most employed are the shower-bath (*douche en pluie*) and the columnar douche (*douche en colonne*). Almost universal usage is made of the shower-bath. A sprinkling-ball (*pomme d'arrosoir*), furnished with a great number of holes, varying

from two hundred to three hundred, each having a diameter of from one to two millimetres, gives issue to the water, which falls in a fine shower upon the nude body of the patient.

The columnar douche consists in a vertical jet of water, which falls in a full stream, first on the head and then on the body of the patient. I shall not speak of the concentric spray douches (*douches en lames concentriques*), nor of the *sheet or bell douches* (*douches en nappe ou en cloches*), because they are but little in use at the present day.

As for the mobile douches, they are administered by means of a flexible tube with various terminal adjustments. The jet most employed is the simple jet, which may be broken either by means of the finger of the operator, or of a pallet adapted to the tip.

As for the partial douches, they are very numerous: vaginal douches, lumbar douches, rectal douches, etc.; all these douches are administered by a particular arrangement of the tubing, which enables one to limit to a given point of the body the action of the cold water.

There is a partial douche often put in usage, and described under the name of *circular douche* (*douche en cercle*). It is an apparatus which you will find in all the well-equipped hydrotherapeutic establishments, and consists in a peculiar framework, with a number of circles or rings, which deliver the water in a shower upon the body of the patient placed in the midst of these circles. There are stop-cocks which enable one to limit the action of the water to a given number of circles.

We come now to the action of water without pressure, and here we have two great divisions. Sometimes the patient is immersed in a certain quantity of water, sometimes the water is applied to the body in small quantity by means of sponges or cloths. The first subdivision is represented by the piscina and the bath. The piscina (*baignoire*) may be of greater or less size, with running or standing water. As for the bath, it varies also according to the circumstances, and may be general or partial, with running or standing water (foot-baths, sitz-baths, etc.).

Priessnitz made much use of the half-bath, and his practice is still in vogue in Germany. Glatz* affirms even that he derives good results therefrom in relieving the pains of tabetic patients. This is the way this bath is

* A Technical and Practical Study of Hydrotherapy. Paris, 1887.

administered: The patient is placed in an ordinary bath-tub partly full of cold water. During the bath the attendants make cold-water affusions over the whole body and practise energetic frictions with the water of the bath. The duration of the bath varies from five to fifteen minutes.

At other times the water is applied by means of a sponge. Lotions of cold water and sponge-baths have passed from the domain of medicine to that of hygiene, and the people of the north practise them constantly, especially the English, who, in their fondness for their bath-tubs, are in the habit every morning of taking a thorough rub-down with a sponge dipped in cold water.

At other times these frictions of the whole body are made with a cloth wrung out of cold water. On other occasions the entire body is wrapped in a cold wet sheet. This wet wrapping will render you great service in your private practice whenever, as in the country and in small cities, you cannot obtain the proper hydrotherapeutic apparatus. These cold-water wrappings are made as follows: You take a thick sheet, which you dip in a pail of cold water and wring out; then, the patient standing, you envelop him from head to foot in this wet sheet. In cases where there is tendency to congestions of the head, or in women where there are visceral congestions, you take care at the same time to immerse the feet of the patient in warm water. The duration of the wrapping ought not to exceed fifteen to twenty seconds. The wet sheet is then removed, the patient is wrapped in a dry dressing-gown, and by energetic frictions reaction is favored.

Just as we have general and partial douches, general and partial baths, so also these applications may be general or partial, constituting wet packs, half packs, wet swathes. Priessnitz made use of both sedative and excitant compresses; to obtain a sedative effect, the compresses were renewed so as to oppose reaction; to produce an excitant effect, they were left in place so as to determine a very active reaction.

The wet swathe consists in a large piece of cloth, long enough to go three or four times round the body; the end of the swathe is wet in cold water and then applied over the epigastrium and lower abdominal regions, and over this the remaining dry portion of the roller is passed in three or four turns. It is to the same process applied to the entire body that the name has been given of *wet pack* or *half pack*.

This is the way of applying the wet pack, or the half pack, the latter covering only the trunk and leaving the limbs free, the former, on the other hand, covering the whole body: On a hair mattress you spread a woollen blanket, and over this a wet sheet, which has been thoroughly wrung out of cold water. The patient is placed on this sheet, which is tightly wrapped around him, and over this is folded the dry blanket. You do not wish in this case to obtain the ordinary effects of cold, but rather a profuse sweating, therefore the patient is left in the wet packing two or three hours, diaphoresis being favored by spreading over all an eider-down coverlet. At other times the patient is simply wrapped up in a dry blanket and covered with abundant bedclothes; this is what is described as the *dry pack*.

As you see, gentlemen, hydrotherapy is not quite synonymous with cold water. It comprehends, on the contrary, applications of water at all grades of heat, and this is what leads me to the second division of my subject,—namely, hydrotherapy with water at various temperatures. But, in order that we may be agreed as to the precise sense in which modifications of temperature should be understood, I here reproduce Delmas's thermometric table, which gives the degrees on the Centigrade and Fahrenheit scales corresponding to the terms in common use in hydrotherapy:

	C.	Fahr.
Excessively cold.....	0° to 6°	32° to 42.8°
Very cold.....	7° to 10°	44.6° to 50°
Cold.....	11° to 15°	51.8° to 59°
Moderately cold (<i>fraiche</i>).....	16° to 20°	60.8° to 68°
Slightly cool (<i>allegourdie</i>).....	21° to 25°	69.8° to 77°
Tepid.....	26° to 30°	78.8° to 86°
Warm.....	31° to 35°	87.8° to 95°
Very warm.....	36° to 40°	96.8° to 104°
Excessively warm.....	41° to 60° or 70°	105.8° to 140° or 158°.

A given temperature may be constant during the douche or bath, or it may be made to vary. In the first case, we have the cold, the tepid, the warm bath; in the second, the Scot bath, the douche with decreasing temperature, the alternating douche, etc. If the cold bath is the most employed, you will see, as we go on, that the tepid bath, the warm bath, etc., may render us great service.

The douche with decreasing temperature is much in usage. It is especially applicable to nervous patients, who experience, under the influence of cold water, too great a shock, the bath being actually painful to them.

You begin the douche with warm water, and you rapidly lower the temperature by

bringing into play other (colder) jets, so that at the end of the douche the water is cold. This is an excellent mode of employing hydrotherapy in the beginning of treatment of delicate, sensitive patients.

The Scot douche, which is much in vogue, consists in employing water of 30° C. at the commencement of the douche, the temperature to be gradually raised to 40° C., and even to 50° C. For one or two minutes the higher temperature is maintained, then the *séance* is terminated by a cold-water douche of several seconds' duration.

In the "alternating douche" jets of warm water are made rapidly to succeed jets of cold water. Care is taken always to commence with the warm-water jets.

We come now to the applications of water in the state of vapor and to hot-air baths, which belong rather to the department of balneotherapy than to that of hydrotherapy; therefore I shall treat this subject very briefly. We have, first of all, the hot-air chamber, which is filled with hot moist or hot dry air, according as use is made for purposes of sudation of hot air alone, or of hot air impregnated with vapor of water. These closets may be of considerable size, so as to admit at the same time one or more individuals, or they may be mere boxes, in which the body and limbs are encased, the head remaining outside of the apparatus. The latter means of promoting sudation, to which the French term *étuves partielles* is applied (the general term *étuve* (stove) being used to designate the hot-air chamber), is one in very common use, though ordinarily, in private practice, a more simple way of effecting diaphoresis is employed. The subject is seated on a wooden chair, whose seat is perforated with from fifteen to twenty holes, and which is furnished with a vertical perforated board between the front legs of the chair and a stool for the feet to rest upon. The patient is then covered with blankets, which are made to enclose the chair as well; then underneath the chair is placed a spirit lamp, with numerous burners, capable of evolving a great amount of heat. Sometimes a basin of water is heated over the lamp, thus giving rise to a great volume of steam and constituting a primitive vapor-bath. This mode of producing sweating requires but simple apparatus, which can be extemporized on almost any occasion.

The administration of the hot moist-air baths may be briefly interrupted by a cold bath or a hot-water bath. The one constitutes the Russian, the other the Turkish,

bath. In the Russian bath, the patient is admitted into a hot moist-air chamber in which there are benches of variable heights surmounting each other. The higher the subject is seated on these benches the hotter the temperature, which varies between 36° C. and 75° C. [The steam is generated in Russia by pouring water on heated stones, but elsewhere, in a boiler, whence it diffuses itself through the chamber.] Then, when the whole body is covered with sweat, the patient takes a plunge in a tank of cold water, or else receives a cold douche.

The Turkish or Hamman bath is somewhat different. The patient, instead of entering a moist chamber, is admitted into a hot, dry-air compartment, with a temperature between 40° and 80° C. Then he is subjected to warm-water applications and a prolonged massage. These kinds of baths have of late years acquired considerable popularity, and you will find in Paris a great establishment which responds to all the exigencies of hydrotherapy and balneotherapy.

Lastly, I must remind you that there are vapor douches, which are administered by a flexible tube communicating with a reservoir in which the water is in a state of ebullition.

I shall have finished this long and tedious enumeration of hydrotherapeutic processes when I shall have mentioned the method of Chapman. You remember that I have told you before that ice has been vaunted as a hydrotherapeutic agent. Chapman has instituted a complete therapeutic system which consists in employing bags of ice containing one or more compartments, these bags to be applied over various regions of the spinal column, according to the organ which he desires to influence. Chapman has mapped out these regions with great precision, taking as his basis data furnished by the researches and experiments of Claude Bernard and Brown-Séquard, and utilizing our knowledge of all the medullary nervous centres. Such, in their aggregate, are the measures of hydrotherapy which are in usage. These methods may be all brought together under one roof, constituting a vast hydrotherapeutic institute, such as all our great cities now possess, or the principal and more important of these means may be employed in the houses of your patients by means of those movable apparatuses with which you are acquainted.

While recognizing the great advantages which the special hydrotherapeutic establishments present, and this not only on account

of the precision and the multiplicity of apparatus put in usage, but also, and chiefly, by reason of the skill, expertness, and general competence of the medical men at the head of these establishments, it must be owned that in a great many instances you may obtain just as good results with the mobile apparatuses or douches which to-day form part of almost all the bath-houses, while the more elaborate establishments have their special use in the more difficult and delicate cases.

Like every other therapeutic system, hydrotherapy has had enthusiastic partisans of certain exclusive modes of cold-water application, and while Priessnitz made especial use of the wet pack, of the half-bath, and of a rigorous regimen, we see Fleury and his school make almost exclusive use of the cold douche, rejecting entirely the warm or tepid baths; while still more recently, under the influence of Landry and Beni-Barde, warm and lukewarm douches are very much employed.

These varied modifications thus given to hydrotherapy are not merely the results of a passing fashion, but they also find justification, as Beni-Barde has shown, in the variable medical constitutions which have prevailed since the time of Priessnitz.

Who were the patients that flocked to Grafenberg at the time when Priessnitz was at his zenith of popularity? They were gouty, rheumatic people, high livers, and it is easy to understand the prodigious success which Priessnitz obtained in these cases with his hydrotherapeutic procedures, the rigorousness of his dietary system, and the forced exercise to which he subjected his patients.

Then, a little later, came Fleury, who found himself in the midst, not of gouty, but of anæmic people, to whom the cold douche, skilfully applied, brought a rapid amelioration. In our day, diseases of the nervous system predominate, and the number of neuropathic patients increases from day to day. Here the methods of Priessnitz and of Fleury completely fail, while, on the other hand, warm water fulfils special indications which relieve these nervous states. Hence the success of the method first advised by Landry and followed out by Beni-Barde.

I have finished what I had to say concerning the physiological effects of cold water and its different modes of application. In the next lecture we will try and turn these data to practical account, and will take up the indications and contraindications for hydrotherapy as applied to the treatment of chronic diseases.

CARBOLATE OF CAMPHOR.

By M. B. COCHRAN, M.D., SHONOND, WIS.

I USE this name because I know of no other that so fully describes the mixture under consideration. It is prepared by dissolving camphor in a ninety-five per cent. solution of carbolic acid to saturation. The carbolic acid will dissolve about three times its weight of camphor, and the resultant is a thin, clear, oleaginous mixture, having a strong odor of camphor and a very faint odor of carbolic acid. To the taste it has a strong and, at first, slightly-pungent flavor of camphor, but no flavor of the acid. Taken internally, in 10-drop doses, administered in capsules, it produces a sensation of warmth in the stomach which is not unpleasant, and which continues for an hour or two. When applied to the skin it produces a slightly-warm sensation for a few moments, and when applied to an abraded surface it smarts for a moment, and then all pain ceases. When two or three drops are injected under the skin a stinging is felt for a moment, which is followed by complete anæsthesia of the immediate neighborhood. When mixed with an equal quantity of cotton-seed oil, and applied to a fresh wound on gauze or cotton and kept well covered, no suppuration follows,—or has not when I have used it in this way. No vesication or pain follows its use when used in this way, or applied either to the skin or mucous surfaces. I have been using it for several months, and I submit a few cases in which it has been of marked benefit:

Mrs. P. came to me with herpes of the right leg,—numerous clusters of blisters over the entire leg and thigh, which were very painful. One thorough application of the mixture with oil caused an entire cessation of the burning, itching, and pain. No new clusters appeared, and desiccation began at once in the old ones, so that in four or five days the patient was well. Nothing else was used. I removed a large fatty tumor from the right arm of Mrs. P. The incision was five inches in length. I dressed the wound with carbolate of camphor and oil, applied on gauze, and it healed without pain or suppuration.

Wm. S. was struck with a knife, the blade of which entered the skin over the superciliary ridge of the right side, passed downwards, laying open the upper and lower eyelids, entered the eyeball on the lower side, and passed through the inferior orbital plate. He was brought to me, two weeks afterwards,

with a suppurating eyeball and lids ununited. The left eye was beginning to sympathize with the right, and was painful and sensitive to light. I removed the right eye, and dressed the wound with carbolate of camphor. All trouble of the left eye ceased at once, and no pain followed in the right; and in two weeks I fitted the patient with an artificial eye, and he returned to his home.

August A. came to me with his neck encircled with boils that were exceedingly painful. He had one also on his left wrist. Two of those on his neck and the one on his wrist were about ready to suppurate, and the others were just forming. I injected them all with carbolate of camphor, mixed with an equal quantity of sulph. ether. The pain ceased at once. Two on his neck and the one on his arm went on to suppuration, and, three days later, I opened them. The others were aborted, and he had no trouble afterwards. I gave him, however, a teaspoonful of a saturated solution of magnesia sulph. every morning before breakfast in a tumblerful of hot water.

Mrs. J. came to me with an acrid vaginal discharge that had existed for three years, which caused a vulvar eruption, with intense pruritus vagina. It followed the menopause, and her life had been one of utter wretchedness in consequence. She also had severe gastric catarrh, with profuse mucous discharge from the stomach. Anorexia, foul breath, and the fecal evacuations were horribly fetid. Her health was broken, and her nervous system in such a condition that her friends feared insanity. I gave her 5 drops of carbolate of camphor three times a day after eating, and applied carbolate of camphor on a cotton-ball to the os uteri once a week, leaving it for twenty-four hours, and following it with daily irrigations of the vagina with hot water. In about one week the foul breath left her, the abnormal fetor of the alvine evacuations ceased, and the pruritus was cured.

The foregoing are only a few of the cases in which I have used it. It melts readily with vegetable oils and with vaseline, mixes with sulphuric ether, dissolves salicylic acid, cocaine, iodoform, and in a solution of forty grains to the ounce of the latter hides its horrible odor. I believe that with it all the antiseptic properties of carbolic acid, camphor, salicylic acid, and iodoform can be secured without pain or irritation, and that its use, both internally and externally, may give us most excellent results.

November 2, 1887.

INTERMITTENCE IN DISEASE.*

By E. W. HOLMES, M.D., PHILADELPHIA, PA.

PERIODICITY is one of the most extraordinary of all vital phenomena. Linked with the earliest development, it continues manifest through all the varied phases of somatic activity, and ceases entirely only with life itself.

Intermittence has, by some, been limited to the peculiar functional activity inherent in the nature of an organ modified but not induced by external influences.

Periodicity would then only be occasioned by the presence anew of a pre-existing cause, external to the economy, and independent of its influence, its phenomena not being auto-genetic, but at each access occasioned anew by the primary cause.

Both terms express the idea of alternation, but intermittence rather gives us the impression of a temporary pause, or a failure of phenomenon, the cause being annulled, weak, or latent, while periodicity predicates a finished cycle, with a promise of return, the cause being enduring and efficient. Periodicity is, therefore, more properly applied to the evolutions of nature and the phenomena of health, while intermittence, as it were an evidence of debility, pertains to the rhythm of disease. Ordinarily, in the domain of medicine, the terms are not thus restricted, but are often used interchangeably.

An ostensible cause of physiological periodicity would be the influence upon us of seasonal and diurnal changes. Thus Darwin ("Descent of Man," p. 204):

"All vital functions tend to run their course in fixed and recurrent periods, and with tidal animals the periods would probably be lunar, for such animals must have been left dry or covered deep with water, supplied with copious food or stinted, during endless generations, at regular lunar intervals. If, then, the vertebrata are descended from an animal allied to the existing tidal ascidians, the mysterious fact that with the higher and now terrestrial vertebrata, not to mention other classes, many normal and abnormal vital processes run their course according to lunar periods, is rendered intelligible. A recurrent period of approximately the right duration, when once gained, would not, as far as we can judge, be liable to be changed; consequently it might be thus transmitted during

* Read before the Northern Medical Society of Philadelphia.

almost any number of generations. This conclusion, if it could be proved sound, would be curious, for we should then see that the period of gestation in each mammal, and the hatching of each bird's eggs, and many other vital processes still betrayed the primordial birthplace of these animals."

Again (*idem*, p. 31) :

"The homological construction of the whole frame in the members of the same class is intelligible, if we admit their descent from a common progenitor, together with their subsequent adaptation to diversified conditions. On any other view the similarity of pattern between the hand of a man or monkey, the foot of a horse, the flipper of a seal, the wing of a bat, etc., is utterly inexplicable. *It is no scientific explanation to assert they have all been formed on the same ideal plan.*"

A plausible assumption and withal enticing, but open to the objection which obtains against the whole doctrine of *radical* evolutionist theory,—viz., special pleading,—a deft incurvation of facts to suit a preconceived idea ; a proving of the assertion by pushing out of view the contrary ; a spurious attempt to evade as long as possible a primal cause, which, in the event, has to be admitted after all. Similarity of structure by no means declares, of necessity, corporeal unity of origin or of descent, and analogy of function indicates comprehensive design.

Evolution is the unfolding of a glorious plan, with uniform and progressive gradation, which by no means sets bounds to the creative ability. The mere fact of periodic phenomena within and around us proves a parallelism,—a similar working of the same great mind, and not their interdependence. The denunciation, "*not scientific*," is neither demonstration nor confutation.

Admitting the influence of seasonal changes upon us, this only signifies that a part of the economy *responds* to stimulus from without, but does not show that this stimulus originates the power or method of response. Such influence is almost a directing agency, from which the capability of response is well defined, and I care not whether you consider it an endowment of our present system, or trace backwards to the *Amœba*, or to the ultimate forces of nature, the original atom must have at some time, somewhere, implanted in it this power of action, and of rhythmic action, which is, therefore, of original impress. We must clearly distinguish,—(1) a capability, (2) its provocative, (3) its additional and peculiar quality of rhythmic performance.

All of our functions may be said to be periodic. This is based upon the indestructibility of matter ; it is really an outcome of its molecular solubility. Every function must have its period of rest and activity,—a tribute to our fallen nature. Each part to do its duty well must have its time for repose, without which it would soon become exhausted, the vital bond dissolved, and death ensue. This is the beginning and cause of periodicity.

It is, then, a natural endowment, a gift to the body, and not a faculty acquired from without, and is shared in common with the universe of matter around us, and is an evidence of temporary existence. "And there shall be no night there ; and they need no candle, neither light of the sun ; for the Lord God giveth them light" (Rev. xxii. 5), is a prophecy not only that we shall put on immortality, but that there shall be a cessation of periodic phenomena and a persistence of cosmic facts unknown to our sphere.

I would not, moreover, have you forget that many of our functional periods are the result not of original bent but of habit. That acts frequently repeated may become periodic, and many of our bodily needs with fixed intervals of expression, may be affirmed to be nothing more than the results of glandular sensations,—mere assertions of an educated reflex, and hence dependent upon intrinsic causes and conditions. Thus, the feeling of hunger recurring at certain hours is probably subordinate to the reflection of the glands of the stomach, which passes away as they are relieved of their secretions. Certain irritative dyspepsias are accompanied by a feeling of hunger directly after a meal, due, I dare say, to the presence of food causing abnormal irritation and congestion of the follicles, in like manner as the sexual excitement dependent upon the distention of the seminal vesicles and possibly of seminiferous tubules is dissipated by ejaculation, while excessive venery, by inducing irritation, retroactively evolves a constant, though weakened, desire.

We sometimes meet with those curious instances of periodic abortion, in which (ignoring for the moment structural defects, which prevent the uterus attaining more than a limited bulk) the patient, otherwise healthy, throws off the product of successive pregnancies at a uniform term,—only obviated by placing the pregnant woman in bed until past the fatal period.

These and other illustrations which might be adduced show that our habits may be

evolved within us directly contrary to custom or to the influences supposed to be acting from without. There is, therefore, a part of the economy which, under proper training, can regulate and develop rhythmic effects.

The most marked physiological rhythm is found in the respiratory and cardiac cycle.

The respiratory centres are in the medulla at the level of gray matter of the fourth ventricle (the vital knot), placed on either side of the point of the calamus scriptorius, and connected by a gray commissure near the motor nerves of the tongue and lips, and cardiac filaments of the spinal and pneumogastric nerves, so that in labio-glosso-laryngeal paralysis the tongue is generally first affected, then the palate, then the orbicularis oris, followed by syncope and suffocation (Duchenne).

The centripetal paths of respiration are the pneumogastric and the numerous sensory nerves of the skin. The centrifugal, the motor nerves from the cervical and dorsal regions of the spinal cord to the diaphragm and the walls of the thorax. Cut the pneumogastrics, respiration will continue. Divide the spinal cord below the medulla, the facial and laryngeal movements will continue, the nostrils still dilate, the soft palate is swayed by the respiratory current, with a rhythmic widening and narrowing of the glottis. Moreover, the whole of the encephalon may be removed from above, and the spinal cord, as far as the origin of the phrenic cord, from below, without suspending the most essential of the respiratory centres. Now division of the cranial nerves in no way destroys respiration, but the destruction of these centres, as shown by experiment and in disease as above, causes its immediate cessation. Hence it is clear that the respiratory impulses proceeding from the respiratory centres are not simply reflex, but evidently start *de novo* from the centre itself. The centre is automatic and not simply reflex (Foster, Carpenter, Küss, Powers).

The heart of a frog, turtle, or fish will beat for hours, or under favorable circumstances for days, after removal from the body. The beat goes on even after the cavities have been cleared of blood. Küss states that the heart of an executed criminal continued its rhythmic contractions an hour after death.

There have been found in the heart itself three principal ganglia,—the ganglion of Remak, near the opening of the inferior vena cava; the ganglion of Ludwig, in the interauricular septum; the ganglion of Bidder, in the left auriculo-ventricular septum. The ganglion of Ludwig paralyzes, the others

cause movements. The heart of the tortoise being cut into two pieces, in the one comprising the auricles and base of the ventricle rhythmic movements were found to continue, but not in the residue.

The rhythmic pulsatile movements of the heart are visible in the course of the second day of incubation in the fowl, and before any differentiation of tissue can be observed (Powers). The "rudiment of the mammalian heart, which is the earliest of the permanent organs of the embryo that comes into functional activity, consists of an aggregation of cells forming a thickening of the mesoblast beneath the anterior portion of the intestinal canal, and lying in the general pleuro-peritoneal cavity. . . . For a long time after it has distinctly commenced pulsating, and is obviously exerting a contractile force, its walls retain the cellular character, and only become muscular by a progressive histological transformation" (Carpenter).

Brown-Séguard found rhythmic movements of the diaphragm in rabbits after section of the phrenic nerve, and even after destruction of the entire spinal cord. He attributes them to minute ganglia, described by Rouget, on (terminal?) filaments of the phrenic nerve.

Peristaltic movements "may occur in a piece of intestine cut out from the body wholly independently of the central nervous system." "The only nervous elements which can be regarded as essential to their development are the ganglia of Auerbach, or those of Meissner in the intestinal walls" (Foster's "Physiology," p. 228).

Thus far we conclude—

That periodicity is a physiological quality inherent in the body, and existing as an original endowment in the healthy nervous system; that certain ganglia have been demonstrated as in themselves giving out rhythmic impulses, being alone able to evolve these *de novo*, and exercising this function "before any differentiation of tissue can be observed," and certain intrinsic actions, at first irregular, when repeated may become recurrent at stated hours through an educated reflex,—that is, by development of the central or ganglionic nervous system.

Intermittence is a peculiarity of many pathological conditions. Trousseau tells us "the intermittent or remittent type testifies to the existence of the nervous element. Diseases of nervous type often have periodicity, as epilepsy, catalepsy, chorea, many neuralgias, etc., these being manifestations of existing disease. Marsh fever is diathetic, like

gout, syphilis, etc., in that it tends to return at stated periods. Solar neuralgias occur in perfectly salubrious countries, where neuralgia comes on in the morning and goes off at night." A patient with "exophthalmic goitre every summer is seized with fever again or has a persistent cough, but auscultation detects no organic lesion of the lungs."

Professor Agnew, in discussing suppuration, says, "The pain is sometimes periodical, as in disease of the bones or joints, coming on in the evening and continuing for several hours;" and, again, "rigors in deep abscesses may return at regular periods with the uniformity of an intermittent."

Murchison, in an interesting sketch of intermitting or paroxysmal pyrexias and their differential characters (*Lancet*, May 3-10, 1879), enumerates twelve varieties:

1, Malarious ague; 2, enteric fever; 3, relapsing fever; 4, pyæmia; 5, pent-up pus; 6, ulcerative endocarditis; 7, tubercular fever; 8, lymphadenoma; 9, syphilitic fever; 10, urinary intermitting fever; 11, hepatic intermitting fever; 12, morphine habit.

A few of his cases are worthy of brief mention.

Thus, "In typhoid fever, for ten to fourteen days, a patient may present all the usual symptoms, . . . at the end of that time the attacks seem to abort; the pyrexia at first becomes more and more remittent, and then intermits. For a week longer the morning temperature may be normal, or possibly at length subnormal. . . . But in the afternoon, or towards evening, the temperature rises daily to 103° , 102° , 101° ; the patient becomes flushed and restless, and often in the night may perspire profusely. . . . Should the patient be seen for the first time during this stage, his case might be mistaken for one of malarious ague."

Again, "I have repeatedly known cases looked upon and treated as malarious ague when the real cause of the intermittent fever has been pyæmia, and the error is all the more likely to be committed from the fact that large doses of quinine, although they will not arrest, will sometimes postpone the paroxysms of fever."

Again, "Fever in tuberculosis, many weeks before any local signs of tubercle can be discovered, . . . may be due to the deposit of tubercle in the lymphatic glands, to the development of an active process in obsolete caseous deposits or to deposit of miliary granules, which in no ways alter the normal physiological signs."

Again, "Syphilitic fever of intermittent type may occur,—1. In common with development of the eruption and *first* appearance of constitutional symptoms. 2. In common with syphilitic periostitis and rheumatism."

Again, "Passing a catheter may cause signs of nervous origin, but fever of intermittent type may be a result of stricture of the urethra, or from any cause of obstruction of the urinary passages, as enlarged prostate, calculus in ureter, the pressure of new growth upon the ureter. The fever may take an algid type, and may be due to absorption of some septic material produced in the decomposition of urine behind the seat of obstruction."

Again, "Patients with gallstones blocking the bile-ducts, the common hepatic or cystic ducts, are very liable to paroxysms of fever which simulate ague. Quinine seems to postpone the attacks."

Dr. Ord ("St. Thomas' Hospital Reports," vol. xi. p. 36): "A gentleman, æt. 30, who had never been in the tropics, suffered from daily attacks of high temperature, with shivering and sweating. . . . He was sallow, worn, emaciated, with some enlargement of liver, none of spleen, . . . with marked evidence of severe primary and a history of secondary syphilis. . . . Took quinine in large doses, and fever was much reduced, but only for a short time. 30 grains ioidid. potass. daily was given, and after two days of this treatment temperature fell and the rigors ceased."

J. Wickham Legg ("St. Bartholomew's Hospital Reports," vol. x. p. 71): "Paroxysmal hæmaturia is a disease characterized by the sudden appearance in the urine of a certain amount of blood or of its chemical constituents, attended by general symptoms which closely resemble those of a fit of the ague."

Dr. J. H. Musser, of this city, in an instructive monograph on "Paroxysmal Fever now Malarial" ("Proceedings County Medical Society," 1884), reports a patient with such marked symptoms that empyema was suspected, and doubt only removed by paracentesis, proving the effusion was serous.

In another case the early formation of meningeal tubercle simulated malaria in its symptoms, and was treated as such, the true character of the disease only being discovered in the fourth week, seventy-two hours before death.

In another case primary cancer of the gall-bladder was thought to be malarial almost until death.

A patient who came under my care several

years ago had frequent, and at times somewhat profuse, hemorrhages from the bladder, attended by most alarming rigors, with heat and sweating. At times during the chill he would go into a state of collapse, so that it would seem as if he must succumb. There were some suprapubic tendencies. The case was a very obscure one, and a variety of opinions had been given the gentleman as to the cause of the symptoms, among which were hemorrhage from the kidney, possibly malignant, paroxysmal hæmaturia, hemorrhage from stricture of the urethra, etc. By a process of rigid exclusion I managed to locate the trouble in the bladder. Quinine seemed to do good, and washing out the bladder with a double catheter and a solution of boracic acid relieved the pain and vesical irritation, the urethra having been previously dilated to normal by metal bougies. The doubt as to diagnosis was removed in about a year, as, after a long watching, the patient passed with the urine masses which proved under the microscope to be polypoid. In the fall I went out of town for a couple of weeks, and the patient continued the washing out of the bladder himself, and found one day he brought away some of these masses in the eye of the catheter. He reintroduced it and withdrew others, and so continued from time to time till no more came, after which the bleeding stopped, the rigors ceased, and his health and body-weight were much improved. This is now some three years since, and only a few times, and that more especially of late, have there been traces of blood from the passage, with no reappearance of the other symptoms. I could multiply instances, but think we already have sufficient evidence to establish the assertion that intermittence is a concomitant of many diseased conditions.

I have endeavored to show that periodicity is a property of the healthy nervous system. It is therefore merely a healthy phenomenon reproduced in disease. We should not regard it as a symptom, but merely as an epiphenomenon.

We think this explanation far more rational than many other of the clumsy theories in vogue. Thus, Billroth declares, "The paroxysms of fever in pyæmia have a similar origin to those of ague, formed perhaps from decomposing pus being poured from time to time into the blood, *under favorable circumstances* exciting rigors and fevers."

Murchison asserts, "The fever paroxysms are due to propulsion by fits and starts of products of disease from the spleen."

Just as there is a fixed law as to time of birth, of puberty, cessation of menses, and of the cardiac and respiratory cycles, all of which are dependent upon the primary rhythmic endowment of the nervous system, so the action of the *materies morbi* will produce each its own series of symptoms, which may each or all of them be paroxysmal in their manifestation. Of the practical side of my subject I will only speak briefly, as I have already trespassed too far upon your time. We have too long considered chill, fever, sweat, or the recurrence of any one or all of these at regular intervals, as characteristic of ague. We were taught to *always* remember that malarial poisoning might be engrafted upon the onset of other distinct diseases. That malarial poisoning might induce the most grave and obscure symptoms.

I remember well Dr. Wood enforcing this by relating a case of epileptoid convulsions which he regarded as a result of malaria which was, indeed, cured by quinine.

Whilst not denying the virulent and insidious nature of paludal poison, I think we should regard the other side closely, that the rhythmic display may be produced otherwise than by this.

How many of our phthisical patients are treated as malarial, yes, even in the stage of cavity-formation, because the physician was misled by the regular recurrence of certain symptoms! One patient with hectic, loss of flesh, and rigors was declared to have phthisis, when he was suffering from syphilis, with suppuration of inguinal glands. The rigors and fever disappeared under the use of a bistoury.

I have purposely avoided the allied subjects of the mechanism of fever and chill, the rationale of motor impulse, or of peripheral irritation, and the differentiation of diseases, but allow me in closing to inculcate the maxim, Never say your patient has *malaria* or *ague* until you are *sure* he has *nothing else*.

It has been my privilege to endeavor to maintain,—

1. Periodicity is a physiological quality inherent in the healthy body, and more particularly in the ganglionic nervous system.
2. It is modified but not produced by influences external to the body.
3. Intermittence in disease is but a manifestation of a normal function under morbid excitation, and should not be considered a pathognomonic symptom of any class of diseases, much less of any special poison.

4. Intermittence is a symptom attendant upon many diseases.

5. By clearly recognizing the intra-nervous origin, subject, however, to irritation and excitation by extrinsic stimuli, we eliminate one of the most fruitful sources of serious error in diagnosis.

1523 GREEN STREET.

RECOVERY FROM FOUR-FIFTHS OF A GRAIN OF HYOSCINE.

By W. H. H. GITHENS, M.D.

MISS L. S., about 45 years of age, dress-maker, light complexion, medium stature, and of fair physical development, sent for me November 28, 1885, on account of menstrual suppression; this was followed by ovarian neuralgia. Typhoid fever of a mild type gradually developed, and my visits continued through December, 1885, and up to the 12th of January, 1886, when I discharged myself, my patient being able to go out for a short walk. There had been a good bit of delirium through the fever, but the mind seemed to clear up entirely during the convalescence. There was not a perfect return to strength, and the disposition was not precisely what it had been before the fever. In March, 1886, I was called to see her again on account of sleeplessness, and prescribed hyoscine hydrobromate (Merck's), gr. i; alcohol, f3i; aqua, f3iv. M. Sig.—Four drops at bedtime for sleeplessness. Thus giving about $\frac{1}{8}$ grain at a dose. One or two doses usually accomplished the desired purpose. After a few days the insomnia passed away, and the bottle was put aside, less than a fluidrachm having been used. A few days later, while she was alone, she drank all that remained in the bottle, not less than four-fifths of a grain of hyoscine hydrobromate (granting that the prescription had been properly filled). Profound sleep was the only effect of this enormous dose. A neighboring physician was called in; he used towel-slappings and other forms of personal violence, and administered croton oil. I did not see the patient until the next day, when all effects of the hyoscine had passed away, so I can tell nothing of the state of the pupils or skin. The latter was bruised from the violence, and her mouth, tongue, pharynx, and stomach were in a terrible state of inflammation from the local action of the croton oil. I do not know why it was administered.

She committed suicide by hanging, July 27, 1886. Her mania took the form of fear of personal injury by men, the first objects of dread being workmen repairing the street-railway and men in a blacksmith-shop across the way. Removal to another house and mental occupation did not have any good effect: her room became peopled with the phantasms of her brain.

A FEW WORDS ON A CERTAIN KIND OF INSOMNIA.

By F. EKLUND, M.D., STOCKHOLM, SWEDEN.

THE two most reliable signs of perfect health are, firstly, absence of pain; and, secondly, the ability of sleeping tranquilly and soundly.

But, unfortunately, the above state is comparatively rare, as the actual number of those who are victims of this most trying and serious affection—insomnia—is very great, and, moreover, is still on the increase.

As it would be beyond me to enter into a minute or exhaustive treatise on the subject, I must content myself with giving the reader a short account of a certain kind of insomnia which is most frequently met with, and which at the same time is most difficult to treat. I refer especially to the insomnia caused by malaria.

Guided by the experience of many years, I will, in as few words as possible, jot down the results of my observations concerning the different symptoms and forms of the malady. Serious mistakes may result if the cause of any insomnia be either mistaken or unknown.

First, we have a group of patients who sleep neither day nor night. It seems an utter impossibility for them to close their eyes or rest for a moment. All during the long night-watches they lie wide awake and count each stroke of the clock, and are painfully conscious of every sound. They are tortured by their own thoughts, and arise in the morning tired out instead of refreshed, scarcely able to get about, and almost entirely unfit to attend to their daily duties. During the day they sometimes feel overpowered by sleep, but when night comes again it is only a repetition of the previous one, and again the morning dawns without the patients having enjoyed a moment's sleep.

In another form of this complaint, when the patients have once awakened they find it

utterly impossible to get to sleep again, after, perhaps, a rest of only two or three hours at the very longest. Nevertheless, they will feel strengthened and refreshed by this short sleep sufficiently to be able to attend to their business, during which, however, they frequently break down, overcome by fatigue, their limbs seeming to give way under them.

To a third class of insomnia belong those patients who are able to sleep well upon retiring, but who always wake up at a certain time or moment. If it be on the hour, they will always start up out of their slumber while the clock is still striking, and after that there is no sleep for them for the rest of the night. When they awake they state that their short rest seems to have perfectly refreshed them, but they are usually subject to slight chills and fever and sweating, also to neuralgia and lumbago, and frequently to exhaustion.

It is most frequent upon careful examination of such patients to find that they for some time past have been suffering from intermittent fever, and are thus under the continued influence of malaria, and intermission is always more or less evident.

It is my intention to endeavor to give a natural and plausible explanation of the cause of this peculiar insomnia, and it will be hardly necessary for me to add that my conclusions are not based on hypothesis, but on practical experience.

It is a well-known fact that certain alkaloids, such as caffeine, theine, and theobromine, have the property of causing wakefulness.

It seems very probable to me that the microbes of malaria might produce a similar pathological action in many respects to that caused by the above-mentioned alkaloids. It is evident that these microbes are contained in great quantities in the veins, and also in the smaller vessels of the pia mater and the large ganglions of the brain. Here they may act as a most delicate "reagent," by means of which the existence of malaria may be proved,—viz., by their effect in producing insomnia of the patient.

Regarding the treatment of such malaria I have invariably obtained the best results by using quinine.

The treatment generally restores sleep to the patient in a very short time. The following is the formula I mostly use :

R Quin. sulph., .40 to 1 grm. (6 to 15 gr.);
Sod. bicarb., 1 to 2 grm. (15 to 30 gr.). M.
S.—F. tal. dos. No. xii. ad caps. amyl.

Take 1 powder or capsule every morning, and, if the case require it, 1 in the evening.

I found this formula to be most useful. I used the sodium bicarbonate because in most cases the patients were greatly troubled by symptoms of chronic gastric catarrh, which was relieved by its use. In some special cases I found quinine combined with dilute phosphoric acid to be of great value, in the following formula :

R Quin. sulph., 4 grm. (60 gr.);
Acid. phosphor. dilut., 5 grm. (75 gr.);
Syrup. zinzib., 30 grm.;
Aq. dest., 120 grm. M.
S.—A tablespoonful twice a day.

It will perhaps be unnecessary for me to state that I am bitterly opposed to the use of morphine, chloral, or any other narcotic or soporific in such cases. All my honored colleagues agree with me as to the danger of the use of such drugs in this affection. Instead of doing good, they augment and heighten the disease more than the microbes themselves do. In connection with this comes also an overwhelming sensation of excessive fatigue and mental depression, accompanied frequently by increased sexual desires and a morbid anxiety about business, etc.

I have furthermore found a hydropathic treatment to be of great service in the treatment of such insomnia, and usually administer a hip-bath twice daily. The temperature of the water should be from 28° to 32° C., and the patient should remain in the bath for two to four minutes. The water should cover the navel. It may be necessary for the patient to take a course of forty or fifty such baths during treatment. After the bath the body and limbs should be washed and then well rubbed. A bucket of cooler water (say 18° to 20° C.) may be poured over each shoulder, and later, after ten such baths have been taken, the patient should take a cold shower (10° to 15° C.) for about twenty seconds or a minute, and should then be well dried and rubbed. A massage treatment has also good effects.

In advanced stages of the malady friction should be used with a bath-towel dipped in tepid, fresh, or even cold water, as soon as the patient has gotten up.

As for my personal experience, I have spent many days and nights in the marshes; indeed, for the last eight years have lived and practised in a marshy country, and have found the above treatment to be most invaluable both in treating my patients and myself.

The Therapeutic Gazette

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Medical Publisher, Box 470,
DETROIT, MICH.

Philadelphia, 714 Filbert Street.

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Leading Articles.

CHRONIC LEAD-POISONING.

MOST of our readers are no doubt aware that some little time since Dr. J. J. Putnam, of Boston, called attention to the fact that in many cases of obscure diseases of the nervous system the symptoms are due to lead-poisoning, although there is no blue line upon the gums. In regard to the general correctness of these observations there seems to be little doubt. But we suppose few persons are prepared for the disclosures made in a recent paper by Dr. Putnam ("Transactions Association of American Physicians," 1887). In this paper there are reported eighty-six cases, in none of which were the classical symptoms of lead-poisoning, such as colic, marked cachexia, characteristic cerebral attacks or paralysis, or blue line on the gums, and yet in forty-eight of which lead was found in the urine. The various symptoms which were present in the cases in which lead was found are summed up by Professor Putnam as follows:

1. Paræsthesia of the hands and feet (two middle toes); twitching of the fingers; exaggeration of the knee-jerk, especially left.

2. General feebleness; paræsthesia in legs, with slight anæsthesia; twitching of muscles of legs; marked improvement under treatment; malarial history.

3. Spastic paraplegia; cramps and twitching of the calves; knee-jerk and ankle clonus exaggerated.

4. Trembling of hands; sense of coldness and numbness of toes; lancinating pains in legs; fatigue on exertion.

5. Marked progressive spastic paraplegia, with myosis and pupillary reactions; ataxia, and some atrophy of hands.

6. Progressive weakness and stiffness in legs, with diffused and almost universal pains; marked tremor.

7. Temporary pain in chest, with slight dyspnœa; progressive numbness; heaviness and weakness in legs.

8. Numbness in feet and legs, with impairment of strength; tremor of hands and tongue; some wasting of small muscles of the hands; temporary retention of urine.

We are prepared by past experience to believe that multiple neuritis frequently is the result of obscure lead or arsenical poisoning, but confess to some reluctance in acknowledging that so many different forms of nervous and functional disorders are the outcome of one common cause.

The assertion of a chemist that he has found lead in the urine is not absolute proof that the lead really existed in the urine, nor is the existence of lead in the urine absolute proof that the symptoms of disease present in the case are the result of lead-poisoning. This thought naturally leads to two questions: First, Is the method of analysis adopted in the cases of Professor Putnam reliable? Second, May lead be present in the urine of persons free from disease?

The method of analysis adopted by Professor E. S. Wood and his assistants is described by Dr. Putnam as follows (we understand from the context in the words of Professor Wood himself): "The urine is first evaporated to dryness, then fused in a crucible, with the addition of a little pure nitre, till it becomes white. The crucible is then cooled, and dilute HCl added, hot, to extract the residue after ignition. It is then filtered, and the filtrate treated with ammonia to alkaline reaction, to precipitate the phosphates and iron. Sulphide of ammonium is added at the same time, which throws down the sulphide of iron and lead. This is washed three times by decantation with hot water, then water is added, and the whole acidified with

HCl, and allowed to stand until the next day. It is then filtered through a small filter and the residue washed. A little pure (free from iron) nitric acid is then added, drop by drop, by which the sulphide of lead, if present, is dissolved and carried through as nitrate of lead. This is collected in a watch-glass, evaporated to dryness, and the final test made by the addition of a drop of water and a crystal of iodide of potassium."

In a matter like the present it is of the gravest importance that the method of analysis employed by the chemist be correct in all the principles and details. We therefore submitted the above statement to a chemist of authority for criticism. The first point to which he directed attention is that many crucibles contain lead in their glaze, which lead certainly would yield to a heated mixture of organic matter and pure nitre and form a soluble plumbite of lead. A large manufacturer of crucibles at Trenton informs us that many of the glazes contain as much as thirty per cent. of oxide of lead. That the glaze of all crucibles does not contain oxide of lead was established by our chemist by actual testing. Whether Professor Wood's crucibles contained lead or not remains at this distance an uncertain question. The second criticism is as to the meaning of the word "pure." When a "little pure"—*i.e.*, a little concentrated—nitric acid is added to sulphide of lead it does not, as stated in the text of Professor Putnam, dissolve all of the lead as a nitrate, but converts a portion of the sulphide into sulphate, which is insoluble and remains on the filter. There must be, therefore, if the method of Professor Wood be strictly followed out, a loss of lead at this point. Probably Professor Wood used nitric acid which is not concentrated, and which does not convert the sulphide into the sulphate, but the word *pure* ought to have been more definitely explained than it is in the text. A third very important point is the failure of Professor E. S. Wood to state, in the last line of the description of his method, whether he relied upon the formation of a yellowish color, or whether he actually got the crystalline plates of iodide of lead. If he relied upon the color his results are open to error, because if a little nitric acid had been left in the evaporation the yellow color would have been produced by the liberation of a minute quantity of iodine. Or, again, the yellow coloration may have been produced by the action of the potassium iodide upon a trace of copper, which latter may have got into the solution from

the use, or even the contiguity, of brass or copper utensils during the course of the analysis. This is of very frequent occurrence in laboratory operations, and is often due to minute particles of cupric oxide carried by currents of heated air and falling into the material under examination. So, again, the hydrochloric acid may not have completely dissolved the iron from the precipitate of the sulphides of lead and iron, and the result of the final test with potassium iodide (if simply a coloration) may have been due to the presence of iron. In order to avoid these fallacies, the final residue should at least have been tested for copper and iron. Finally, a serious possible source of error in the analysis of urine made according to Professor Wood's method is, that if the urine contain any bismuth it would yield not only the yellow color in the final test, but also a precipitate of yellow crystalline plates scarcely distinguishable by the eye from those of iodide of lead.

In regard to the possible contamination of lead in the bottles in which the urine was collected, Professor Putnam probably secured himself against it sufficiently by acidifying the urine, although, strangely enough, he is in error in the belief that flint-glass, out of which his bottles were made, is free from lead. Flint-glass is lead-glass.

The second question was asked a few paragraphs back as to how far lead may be tolerated in the system of human beings without causing disease. There seem to us only two methods which offer any hope of arriving at the solution of this problem. The first of these methods consists in the making of numerous examinations of the urine of persons who are entirely healthy. If lead be found to be habitually present in the urine of even a small proportion of apparently healthy persons, its presence in any given urine loses much of its significance and we must concede that a very considerable amount of lead must be accumulated in the system in order for it to act as a distinctly toxic agent. Unfortunately, in the series of analyses made at Harvard the urine was examined chiefly of persons more or less out of health, and therefore we are unable to draw any distinct conclusions as to the tolerance of lead by the human system, although Professor Putnam records having found it in the urine of three absolutely healthy individuals. We sincerely hope that some one will undertake a series of analyses looking for lead in urine during health. The second method of testing the relation between

lead in the urine and symptoms is the therapeutic one : if in such cases the symptoms disappear under the administration of iodide of potassium and the other usual treatment of lead-poisoning, it is fairly made out that the symptoms are due to the lead. Failure of improvement, on the other hand, does not prove the lack of connection between the metal and the symptoms, because the metal may already have produced serious organic disease which is irreparable, although the metal itself be entirely removed from the body.

STROPHANTHUS.

THIS new African heart-drug continues to attract attention both abroad and in this country, and the evidence seems to be sufficient to show that it has great practical value.

Professor Drasche (*Wien. Med. Blätter*, 1887, page 586) found 5 drops of the tincture of strophanthus given to the healthy man would produce in about three hours a fall of from about 8 to 12 beats per minute of the pulse, which would last part of the day. After 10 drops the pulse fell in half an hour 12 to 20 beats ; after 20 drops the pulse sank in the single case given from 84 to 54 strokes. There was no influence on the respiration, but a lowering of the temperature, in some cases as much as a degree. Fifteen drops given hypodermically caused great irritation and pain and swelling at the place of injection, violent headache, repeated vomiting and nausea, and copious secretion of urine : the pulse fell in an hour from 96 to 84, and the next day the headache and general ill feeling continued, with a very pronounced local irritation. In a strong forty-five-year-old man suffering from left-sided pneumonia, four doses a day of 5 drops of tincture of strophanthus was followed in twenty-four hours by a fall of the pulse 18 beats per minute, and by a distinct slowing of the respiration and reduction of the temperature 0.8° C. The pneumonia itself was not affected, and the crisis came on the ninth day. In another similar case, under the influence of the strophanthus, the pulse fell from 128 to 88 beats. In acute phthisis the remedy acted very promptly : there was high fever, and the pulse ranging from 140 to 152 ; five minutes after the exhibition of 10 drops the pulse fell 20 beats, and two hours later 40 beats, whilst the temperature had gone down between one and two degrees, and the distress-

ing cardiac palpitation was relieved. The rapidity of the action of strophanthus showed itself also in a case of gastro-duodenal icterus. In twenty minutes after the use of 20 drops the pulse had fallen from 72 to 60, and the blood-pressure, as measured in a temporal artery, had increased ten per cent. According to Professor Drasche, 40 to 50 drops a day must be considered as the maximum dose of the tincture. Under 60 drops a day, in an experimental case, the pulse became exceedingly small, weak, and irregular. In a case of vaso-motor neurasthenia, with great rapidity of the pulse, the continued use of the medicine was kept up, with interruptions, until six hundred drops of the tincture had been taken, without the production of any evidences of cumulative action. Professor Drasche has also used the remedy in a number of cases of heart-disease. In one case of a thirty-six-year-old patient with fatty heart and very pronounced cardiac symptoms, 10 drops of strophanthus tincture produced great relief of palpitations and of the dyspnoea. One hundred and sixty drops were taken in the course of five days without the slightest evil influence. In a second very advanced case, in which there was dropsy, very pronounced dyspnoea, and very irregular pulse (120), and in which digitalis had failed, 5 drops of the tincture every two hours, until thirty drops had been taken, caused the pulse to fall to 108 without becoming more regular, but shortly afterwards the patient fell into a stupor, and four days later died. In another similar case, forty drops of the tincture a day was followed by marked fall of the pulse and increase of the urine. Strophanthin was later given in solution, the four doses each day amounting to two milligrammes. The pulse became very irregular, varying from 36 to 60 beats every minute. There was marked increase in urinary secretion and great lessening of the dyspnoea. In a case of aortic insufficiency, which came into the hospital almost moribund, with the pulse 96, scarcely to be felt, 15 drops in an hour caused the pulse to fall to 72 and become much stronger, and the patient slept through the night, for the first time in three months. Afterwards 40 drops of strophanthus tincture being given daily, the pulse fell to 60 ; but the patient complained of so much burning in the œsophagus and stomach and nausea that the medicine was withdrawn and digitalis substituted. It, however, failed to have influence, and the man shortly afterwards died suddenly. In a second case of

aortic insufficiency, the tincture of strophanthus was given for four weeks regularly, 40 drops a day, with great relief to the dyspnœa. Besides these cases, Dr. Drasche reports several others in which the strophanthus tincture produced results similar to those that have been just described. The effect upon the excretion of urine seems to have been most extraordinary. In some instances the amount excreted after the administration of the drug was five, or even six, times what it had been before. Almost universally when the strophanthus was pushed the patient complained of burning in the œsophagus and stomach, with loss of appetite and extreme gastric distress, which not rarely rose to vomiting; sometimes there was diarrhœa. In no case was there any evidence whatever of cumulative action. The action of the drug is not only more prompt in coming on, but is evidently less permanent than is that of digitalis. Dr. Drasche also tried using the remedy in cases of mitral insufficiency; here the effect of the remedy was often more marked than in cases of aortic disease. In one old case, with bloody sputum and other very severe symptoms, 25 drops a day of the strophanthus tincture had so favorable a result that on the eighth day the patient left the hospital. In a case of mitral stenosis, with very severe symptoms and great cyanosis, after a second dose of 45 drops of the tincture the pulse fell from 88 to 44 per minute and the respiration from 36 to 18, the dyspnœa disappeared, and the heart's action became not only stronger but less irregular. Under the continued use of the remedy the pulse became strong, at the rate of 44 beats, the respiration 16, and the urine enormously increased. This patient took in all three hundred and sixty drops of the tincture without any untoward symptoms, but with the most favorable results, the patient leaving the hospital greatly relieved. Other cases of mitral disease were affected similarly. As the result of his observations, Professor Drasche thinks that whilst we must consider digitalis to act more as a tonic agent upon the heart, strophanthus must be looked upon rather as a cardiac stimulant. He is also particular in cautioning a physician to see that the preparation used is genuine and pure. Strophanthin he believes to fully represent the tincture. As a diuretic, he gives the daily dose of strophanthin as 3 milligrammes, and, for reasons which we have already laid before our readers, condemns its use hypodermically.

Mr. Zerner and Loew (*Wien. Med. Wochenschr.*, Nos. 36 to 40, 1887) have recorded the results obtained in the service of Professor Bamberger, of Vienna, in using strophanthus in cardiac affections. They affirm that it is equal in efficacy to digitalis, and that they have only seen it fail when the degeneration of the heart-muscle has gone to the last degree. The indications and contraindications for its use, they think, are identical with those controlling the employment of digitalis. In one mild case of Basedow's disease, the pulse, which, at the moment of administration, was 100, half an hour later had fallen to 88; half an hour after this it was 84, but four hours later it had regained its original frequency. In seven out of eleven cases of Bright's disease they achieved very good results from its administration. It is especially indicated when there are evidences of secondary failure of the heart in renal disease. In several healthy subjects no diuretic action at all followed the use of strophanthus. This, if it be confirmed, proves that the diuretic action of the drug in disease is dependent not upon any influence upon the secreting structure of the kidney, but is the result of the increased blood-supply to the organ. Zerner and Loew also confirm the statements of Drasche that in large doses the remedy produces nausea and vomiting.

Dr. William Budd reports in the *Lancet*, September 10, 1887, two cases of mitral cardiac disease, with albuminuria, and excessive and other very severe symptoms, in which strophanthus was entirely successful after the failure of digitalis. The effect of the drug upon the secretion of the urine was extraordinary. He used 5 minims of the tincture three times a day.

A new use for this remedy, which more than its properties as a cardiac tonic will serve to render it popular, is its employment as a diuretic in renal colic. Dr. Hutchinson reports, in the *Provincial Medical Journal*, October 1, 1887, a case of marked uric acid diathesis occurring in a man aged 52, who, since twenty years of age, had been subject to periodical attacks of gravel. When Dr. Hutchinson was called to see the case, the patient was then suffering from a violent attack of colic from the passage of a calculus through the ureter. There were severe lumbar pains, scanty urine, and difficulty in micturition. At the onset of the attack the urine was high-colored, and then smoky, and finally contained blood. The bowels were confined; there was no nausea, but total

anorexia. Dr. Hutchinson ordered him turpentine stupes across the loins, plenty of fluid to drink, a seidlitz powder in the morning, and tincture of strophanthus in 5-minim doses three times a day. The result of this treatment was to produce copious diuresis and a rapid relief of the pain.

In the absence of any official standard, the tincture of strophanthus, as sold in various drug-stores, must vary in strength, and the important question as to the proper dose to be employed must remain unsettled. The only recourse that the practitioner has, who does not know exactly the method in which the tincture that he is using has been prepared, is to commence with a minimum dose, and increase until the effects are obtained. The tincture should be prepared according to the method of Professor Fraser, as given in the first volume of the *British Medical Journal* for this year. The dose of this tincture may be set down as 5 drops, carefully increased, if necessary.

DIURETIC ACTION OF CAFFEIN.

IN poisoning by caffein there is usually great increase in the secretion of urine, and the statement of Professor Gublin (*Bull. Thérap.*, xci. 523), that the citrate of caffein is one of our most powerful and certain diuretics, has received abundant confirmation. The effect of the drug upon healthy men would indicate that in dropsies it acts not simply by regulating the circulation of the kidney, but has also a distinct effect upon the renal organ itself. That this surmise is correct is proved by the experiments of W. V. Schröder and A. Langgard (*Centralbl. Med. Wissen.*, 1886), who found that when canulas were inserted into the ureters in an animal whose vaso-motor system was completely paralyzed by chloral, injections of caffein into the circulation caused a very great increase in the urinary secretion. Langgard found that usually before the great increase of diuresis the urinary secretion was arrested for several minutes. This is in exact accord with the experiments of Dr. C. D. T. Phillips (International Medical Congress, Washington, 1887), made with Roy's onco-graph. Dr. Phillips found that immediately after the injection of a small dose of caffein, when the blood-pressure was either slightly depressed, elevated, or unaffected, the kidney underwent a very distinct contraction of its volume, which lasted for two, or even three,

minutes, and was accompanied with arrest of the urinary secretion. After the contraction the kidney rapidly expanded beyond its original bulk, and at the same time the urinary secretion became excessive. These various experiments prove that the action of caffein upon the renal secretion is entirely independent of its influence upon the general circulation. The fact discovered by Dr. Phillips does not show, however, that the diuresis is caused by the increase in the flow of the blood to the kidneys. It is much more probable that the condition of the local blood-vessels is the result of the action of the drug upon the renal secreting tissue; especially is this the case, since Schröder found that the division of all the renal nerves did not prevent the increase of the secretion under the action of caffein. Because the secretion from the uninjured kidney was increased much more than from the kidney whose nerves were destroyed, Professor Schröder believes that the drug increases diuresis by acting both upon the nerve-centres and the secreting structure of the kidney. To our thinking, however, the direct injury to the secreting apparatus of the kidney by division of the renal nerves is sufficient to account for the difference between the influence of the alkaloid upon the normal and the operated-upon kidney, without necessitating a belief of the possession by the alkaloid of a twofold influence. Professor Schröder found that there was an increase not only of the liquid, but also of the solid of the urine.

EPHEDRINE, A NEW MYDRIATIC.

PROFESSOR NAGAI has extracted from the *Ephedra vulgaris* Rich., by a process whose details he promises to publish subsequently, an alkaloid to which he has given the name of ephedrine. M. Kinnossuke Miura has published a preliminary note on the action of this drug in the *Berliner Klin. Wochenschrift*, No. 38, 1887, p. 707. He has found that in the frog a toxic dose (of about 8 to 10 milligrammes) of the chlorhydrate of ephedrine produced progressive slowing, and finally arrest of the respiratory movements, without any stage of acceleration. The frequency of the cardiac rate is influenced in the same manner, and the heart is finally arrested in diastole, and the pupil is dilated. These results follow the introduction of the alkaloid in the pericardium or in the lymphatic sacs. In the mammal both

respiration and pulse are considerably accelerated, and finally are entirely arrested, without any previous slowing; at the same time clonic convulsions occur, and the temperature in the rectum becomes elevated. The intravascular blood-pressure is diminished, and then rises above normal during the stage of convulsions, but finally becomes reduced as they pass off. The pupils are dilated whether the poison be injected subcutaneously or instilled in the conjunctival sac. Death is produced by the arrest of the heart and respiration. A lethal dose is .03 to .4 grm. per kilogramme of body-weight in the rabbit, and .22 grm. per kilogramme of body-weight in the dog. In addition to these notes as to the physiological action of the drug the author likewise, under the direction and in the clinic of Professor Scriba, at Berlin, carried out a series of clinical experiments, testing the value of seven and ten per cent. solutions of ephedrine as a mydriatic in normal and diseased eyes. Solutions of six and seven per cent. have proved themselves unreliable in producing dilatation of the pupil, it occurring in some subjects after ten or fifteen minutes from the instillation, while in others it has not appeared. With ten per cent. solutions the author found that the pupils were dilated in from forty to sixty minutes after an instillation of one or two drops, this dilatation being equal on the two sides when no inflammation was present, and when the refracting power of the two eyes was the same. The dilatation of the pupil produced by this drug is not complete, but it was sufficient to permit ready exploration of the retina in all its extent, even although the entrance of the ray of light into the eye caused each time a slight pupillary reaction. Children and aged persons were found more sensitive to the mydriatic action of ephedrine than adults. The accommodation was not paralyzed at all, or at most but slightly. When the iris was in a state of irritation or inflammation, but little dilatation of the pupil was produced by this alkaloid. In normal eyes the dilatation from the time of instillation to the time of the return of the pupil to its normal diameter varied in duration from five to twenty hours. After two weeks of three instillations daily of a ten per cent. solution no conjunctivitis or no disadvantageous result was detectable, and no increase or diminution of the intraocular pressure. Comparative experiments made with solutions of homatropine have demonstrated that following instillations of this mydriatic six to nine hours

are required for the pupil to return to its normal diameter. It would appear from these facts that the chlorhydrate of ephedrine is a convenient mydriatic, which may be substituted for homatropine for the examination of the ocular fundus: it is distinguished from the latter by the facility with which it is prepared, and by the harmlessness of its employment, even although a solution ten times more concentrated must be employed. In addition, its employment is not complicated by any ill effects, and the accommodation is so slightly paralyzed as to cause no inconvenient results to the patient. We will await with interest Professor Nagai's promised communication as to the mode of preparation and chemical constitution of this substance, and for further details as to its clinical employment.

AMYLENE HYDRATE, THE NEW HYPNOTIC.

OUR readers are familiar with the studies of Professor von Mering with amylene hydrate, or tertiary amyl alcohol. At his suggestion this substance has been extensively tested in the clinic of Professor Jolly. Comparing the effects with other hypnotics, such as chloral, paraldehyde, and urethan, the results seem extremely favorable. As reported by Dr. Scharschmidt, in the *Therapeutische Monatshefte* for September, 1887, the drug was administered to eighty patients in one thousand and fifty different doses, given in brandy, with a small amount of syrup of orange-peel to disguise its taste. It was found, however, that this mode of administration was not satisfactory, since the addition of the syrup caused a variable precipitation of the amylene hydrate. The best mode of administration was found to be in combining the amylene hydrate with red wine, and a small amount of sugar added to it. Apparently an equally effective method of administering it is with a small amount of extract of liquorice, which completely disguises the taste of this substance when dissolved in water. The doses in which it was employed in Professor Jolly's clinic varied from 22 to 75 grains, the latter quantity being only once given. The average dose consisted of 45 to 60 grains. Dr. Scharschmidt tabulates the cases in which this drug was employed, from which it appears that in eighty per cent. of his cases sound sleep, of from five to seven hours' duration, was produced with doses varying from

20 to 45 grains. In comparing this with chloral and paraldehyde, its superiority would appear to be very striking, since only in about seventy per cent. of the cases where chloral was used, or seventy-six per cent. in the case of paraldehyde, was the result successful. In the experiments with amylene hydrate no absolute failure was noted in any case, since sleep was always produced either by the continued use of the original dose, or by gradually increasing the quantity. It is noticeable from this that the writer has obtained even more successful results than Von Mering, since Dr. Scharschmidt finds that in general 22 grains of amylene hydrate were equivalent to 75 grains of paraldehyde, and that the action of 15 to 25 grains of chloral was always less favorable than the results which followed the administration of from 35 to 50 grains of amylene hydrate. Absorption of this new hypnotic by the alimentary canal and by the stomach or the rectum occurs with great rapidity, since in many cases sleep occurred within five or ten minutes after the administration of the remedy. In excited or restless cases twenty or thirty minutes were required for the production of sleep, and in maniacal cases from one-half to one hour. No disagreeable after-effects were noted, no disturbance of the appetite or in the action of the bowels, and but rarely slight headache on the following day. Of special importance is the fact that the statement of Von Mering is confirmed, that amylene hydrate produced no modification of the respiratory or circulatory organs. The rhythm and number of the respiratory movements are not to be distinguished from those of normal sleep. No change in the number of the pulsations or in the pulse-curve, as examined by the sphygmograph, were detected after the administration of the amylene hydrate; in some cases a slight increase and in others a slight decrease in the pulse-frequency being scarcely worthy of notice, and presenting no greater variety than might be expected between the sleeping and the waking states. As yet no positive statement can be made as to whether patients become accustomed to this hypnotic and its effects gradually wear off, but it would seem that its having been used constantly with success in two cases for thirty-nine days would warrant a negative answer. Of the eighty cases in which this drug was employed, twelve consisted of melancholia with stupor, five of melancholia agitata, thirteen of dementia paralytica, one of epilepsy with alcoholic dementia, four of primary dementia, seven of

hallucinatory insanity, one of hypochondriacal insanity, one of stupor, one of chronic alcoholism with insomnia, ten of mania, two of delirium, four of delirium acutum, six of delirium tremens, one of hysteria with insomnia and delirium, one of epilepsy with excitement and delirium. It would appear from these results that the tertiary amyl alcohol has proved itself to be a reliable hypnotic, since it can be employed in heart-affections, and is without influence on the alimentary canal. It is superior to urethan, since it produces sleep even in states of the wildest excitement, and is at any rate equally as good as paraldehyde in efficiency, and is free from the disagreeable odor and taste of the latter.

METHYLENE CHLORIDE AS AN ANÆSTHETIC.

SINCE the introduction of chloroform into medical practice as an anæsthetic there has been a constant effort to discover some other anæsthetic which, possessing the advantages, would be free from the dangers of chloroform. The theory that in the various chlorine compounds the danger is in direct proportion to the percentage of chlorine has obtained much support, and it would therefore appear warrantable that methylene chloride (CH_2Cl_2) would be less dangerous than chloroform (CHCl_3). In spite, however, of this theoretical advantage possessed by methylene chloride, it has not been able to displace chloroform, perhaps from the less degree of anæsthetic power possessed by the former. Our readers are already familiar with the recent experiments of Richardson, who, in 1867, first called attention to this substance as an anæsthetic, and with the fact that in spite of the favorable claims advanced by Richardson, with other writers, such as Spencer Wells, the value of this drug is almost universally denied. Dr. Eichholz and Professor Geuther, in a paper published in the *Deutsche Medicinal Zeitung*, August 22, 1887, attributed this doubt as to the value of methylene chloride as a narcotic to the fact that methylene chloride of commerce is not by any means pure methylene chloride, but that the English preparation is a mixture of one part of methylene alcohol and three and four-fifths parts of chloroform, and that the German preparations consist of one part of methylene chloride and four parts of chloroform. This impurity is further testified by the fact that one hundred grammes of

respiration and pulse are considerably accelerated, and finally are entirely arrested, without any previous slowing; at the same time clonic convulsions occur, and the temperature in the rectum becomes elevated. The intravascular blood-pressure is diminished, and then rises above normal during the stage of convulsions, but finally becomes reduced as they pass off. The pupils are dilated whether the poison be injected subcutaneously or instilled in the conjunctival sac. Death is produced by the arrest of the heart and respiration. A lethal dose is .03 to .4 grm. per kilogramme of body-weight in the rabbit, and .22 grm. per kilogramme of body-weight in the dog. In addition to these notes as to the physiological action of the drug the author likewise, under the direction and in the clinic of Professor Scriba, at Berlin, carried out a series of clinical experiments, testing the value of seven and ten per cent. solutions of ephedrine as a mydriatic in normal and diseased eyes. Solutions of six and seven per cent. have proved themselves unreliable in producing dilatation of the pupil, it occurring in some subjects after ten or fifteen minutes from the instillation, while in others it has not appeared. With ten per cent. solutions the author found that the pupils were dilated in from forty to sixty minutes after an instillation of one or two drops, this dilatation being equal on the two sides when no inflammation was present, and when the refracting power of the two eyes was the same. The dilatation of the pupil produced by this drug is not complete, but it was sufficient to permit ready exploration of the retina in all its extent, even although the entrance of the ray of light into the eye caused each time a slight pupillary reaction. Children and aged persons were found more sensitive to the mydriatic action of ephedrine than adults. The accommodation was not paralyzed at all, or at most but slightly. When the iris was in a state of irritation or inflammation, but little dilatation of the pupil was produced by this alkaloid. In normal eyes the dilatation from the time of instillation to the time of the return of the pupil to its normal diameter varied in duration from five to twenty hours. After two weeks of three instillations daily of a ten per cent. solution no conjunctivitis or no disadvantageous result was detectable, and no increase or diminution of the intraocular pressure. Comparative experiments made with solutions of homatropine have demonstrated that following instillations of this mydriatic six to nine hours

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hallucinatory insanity, one of hypochondriacal insanity, one of stupor, one of chronic alcoholism with insomnia, ten of mania, two of delirium, four of delirium acutum, six of delirium tremens, one of hysteria with insomnia and delirium, one of epilepsy with excitement and delirium. It would appear from these results that the tertiary amyl alcohol has proved itself to be a reliable hypnotic, since it can be employed in heart-affections, and is without influence on the alimentary canal. It is superior to urethan, since it produces sleep even in states of the wildest excitement, and is at any rate equally as good as paraldehyde in efficiency, and is free from the disagreeable odor and taste of the latter.

METHYLENE CHLORIDE AS AN ANÆSTHETIC.

SINCE the introduction of chloroform into medical practice as an anæsthetic there has been a constant effort to discover some other anæsthetic which, possessing the advantages, would be free from the dangers of chloroform. The theory that in the various chlorine compounds the danger is in direct proportion to the percentage of chlorine has obtained much support, and it would therefore appear warrantable that methylene chloride (CH_2Cl_2) would be less dangerous than chloroform (CHCl_3). In spite, however, of this theoretical advantage possessed by methylene chloride, it has not been able to displace chloroform, perhaps from the less degree of anæsthetic power possessed by the former. Our readers are already familiar with the recent experiments of Richardson, who, in 1867, first called attention to this substance as an anæsthetic, and with the fact that in spite of the favorable claims advanced by Richardson, with other writers, such as Spencer Wells, the value of this drug is almost universally denied. Dr. Eichholz and Professor Geuther, in a paper published in the *Deutsche Medicinal Zeitung*, August 22, 1887, attributed this doubt as to the value of methylene chloride as a narcotic to the fact that methylene chloride of commerce is not by any means pure methylene chloride, but that the English preparation is a mixture of one part of methylene alcohol and three and four-fifths parts of chloroform, and that the German preparations consist of one part of methylene chloride and four parts of chloroform. This impurity is further testified by the fact that one hundred grammes of

commercial methylene chloride only cost three and a half marks, while one hundred grammes of the chemically pure methylene cost about twenty-five marks. Recently, however, by an improved process of manufacture, pure methylene chloride has been placed on the market at a greatly reduced price. From an elaborate series of experiments Eichholz and Geuther concluded that, whether in its pure condition or mixed with chloroform, methylene chloride possesses great advantages as an anæsthetic, and the authors make the claim that until now the pure article has never been tested as an anæsthetic on man. This is in accord with studies made in the laboratories of the Medical Department of the University of Pennsylvania.

Their experiments in comparing the action of chloroform and pure methylene chloride may be stated in few words, as follows: First, narcosis occurs with both remedies after about the same time. Second, with both drugs there is a preliminary period of excitement. Third, with methylene chloride there is no increase of pulse in the period of excitement; there is in the course of chloroform. Fourth, in both cases after the occurrence of the narcosis there is slowing of the pulse and respiration, though these symptoms occur sooner and to a greater degree in the chloroform narcosis, and the complete arrest of the pulse and respiration occurred much sooner in the case of chloroform than with methylene chloride. The reduction of temperature in narcosis is with both about the same. Methylene chloride produced salivation; chloroform does not; methylene chloride produced transient narrowing of the pupil. In methylene-chloride narcosis the rigidity of the neck is more marked than in the case of chloroform, but convulsions of the limbs are more frequently seen with chloroform than with methylene chloride. With these points of similarity, the only advantage which might be attributed to the methylene chloride is its very much less dangerous action on the heart. For while in chloroform narcosis after the administration of only five cubic centimetres the heart-action is often imperceptible, the authors claim that they have frequently produced profound methylene-chloride narcosis for nearly an hour without ever producing any unfavorable action on the heart. They also state that even when the pulse becomes arrested by the methylene chloride the animals are much more readily and rapidly resuscitated through artificial respiration. In comparing the narcosis produced by pure methylene chloride and mixtures of

alcohol and chloroform, it was found that the addition of methyl alcohol to chloroform somewhat reduced the poisonousness of the latter without reducing its narcotic action, and therefore is to be preferred to pure chloroform as an anæsthetic. The mixture which they recommend consists of forty-five parts of chloroform to thirteen of methyl alcohol. They conclude their paper with the following sentences: First, that the substance heretofore employed as methylene chloride is a mixture of chloroform and methyl alcohol; second, this mixture is to be preferred to chloroform for the production of narcosis; third, that pure methylene chloride produces narcosis quite as rapidly and as profound as either of the above preparations; fourth, that the action of pure methylene chloride on the circulation and respiration is, by far, less dangerous than that of either of the other preparations.

GLEDITSCHINE.

IN a letter to the *Medical Record* of November 5 the genuineness of gleditschine is reasserted, and a proposition is made by Mr. Goodman, through Dr. Claiborne, to submit the leaves supposed to come from the *Gleditschia triacanthia* to a committee composed of medical men, a chemist, and a botanist, who are to determine, first, whether the leaves are really those of the tree which they have been supposed to represent; second, whether they contain any alkaloid; and third, if an alkaloid be found, whether it is an anæsthetic. We understand that Drs. George F. Shrady and F. P. Foster have agreed to serve upon the committee. Is it possible that there is an alkaloid gleditschine, which has really been obtained by Goodman, and that the intermediate druggists have, finding the demand greater than the supply, put upon the market a solution of cocaine under the name of gleditschine?

THE TREATMENT OF GOITRE BY SUBCUTANEOUS INJECTIONS OF ERGOTIN.

A CORRESPONDENT writes us inquiring the exact technique in the treatment of goitre by hypodermic injections of ergotin. In this he gives us an almost impossible task. It is but a short time since this method of treatment was introduced by Coghill, and the discrepancy between the few writers who have published communications on this sub-

ject is so great as to render it impossible to fix the exact status of this mode of treatment. Bauvens, writing in the *Journal de Médecine* for September, 1887, seems to have had remarkable success. His first procedure was to inject 16 minims of a solution containing one part of ergotin to seven of glycerin and seven of water. This proving unsuccessful, he then injected the same quantity of the solution of three parts of ergotin to seven of glycerin and water, and this proving somewhat efficacious, the strength of the solution was then increased to five parts of ergotin to seven of glycerin and seven of water, and in a period of two weeks four injections of 16 minims, which were administered. These injections were somewhat painful, and caused slight inflammation and swelling, but after three weeks both inflammation and goitre were claimed by Bauvens to have completely disappeared. He claims that the injection should not only be subcutaneous, but should be carried into the parenchyma of the gland.

Our own opinion is that the irritation produced by ergotin injections is so excessive as to render it almost unfit for hypodermic use. It is nearly generally acknowledged from experience in gynecological practice that the injections into the skin of the abdomen must be given up, and that the nates alone are fitted for such irritating injections, a fact already proved by the syphilologists for corrosive sublimate and calomel. On the other hand, great difficulty attends the selection of the most suitable solution, for as long as we are ignorant of the active principle of ergot, we can naturally not expect to get a constant preparation of its active principles. As a rule, the greatest reliance may be placed upon the watery extract of ergot. But this also causes troublesome local symptoms even when injected into the nates. A considerable part of the burning pain which follows the use of preparations of ergot is dependent upon their acid reaction. It has been found by Bumm (*Centralblatt für Gynäkologie*, August 28, 1887) that the ergot preparation might be neutralized by a slight addition of soda without interfering with its efficiency, but that the preparation cannot be kept in an alkaline condition on account of its tendency to undergo rapid decomposition. Another source of irritation lies in the concentration of the solution, since the objection to the larger quantity of fluid is not as serious as the local pain and inflammation caused by more concentrated preparations. Weak solutions are, besides, more rapidly absorbed than stronger

solutions, and it may be said that if five, or at most ten, per cent. of the watery extract twice purified, neutralized with soda and filtered, is injected into the muscles of the nates, the local irritation produced is not worth mentioning. As to whether a similar state of affairs holds for injections into the thyroid, or as to whether injections of ergotin offer better hopes of cure than enucleation, must as yet remain undecided.

Reports on Therapeutic Progress.

THE USES OF SACCHARIN.

Saccharin must be regarded from a two-fold aspect in its therapeutical effects and uses: first, antiseptic; and, second, sweetening. It is asserted by competent authorities—Aducco, Mosso, Stutzer, and Stadelman—that it approaches in energy such antiseptics as salicylic acid and thymol. On the other hand, it does not arrest or interfere with the normal fermentative action of the animal secretions in the stomach or intestine. It is without any action on ptyalin or pepsin. Nor does it appear to have any secondary action on the digestive secretions, passing quite unchanged out of the system through the kidney in the urine, in which latter it may be found within half an hour from its ingestion. The result is no different if it be injected subcutaneously or into the intestinal tract. It is not even found in the mammary secretions in either case. Yet so readily is it absorbed and eliminated that even when as much as seventy-five grains were taken daily no trace could be found in the system in twenty-four hours. Professor Leyden and other physicians—notably Drs. Salkowsky and Stadelman, who have used saccharin continuously in hospital practice both as a medicine and for dietetic purposes—state that even when taken in quantities far larger than are required for ordinary sweetening purposes with food, and over a long period of time, there were not the least injurious effects. So reliable are the reports on the use of saccharin in Germany that the authorities have authorized the completion of large contracts for the supply of tablets to the army. Thus it would appear that in saccharin we have an agent which is absolutely harmless in its passage through the system, eliminated from it unchanged without any deleterious effects, transitory or other, on the genito-urinary system, with sweetening properties three hundred times as strong as cane-

sugar, and free from the injurious results which, under certain conditions, follow from the decomposition of a carbo-hydrate in the system. How far, under what conditions, and in what secretions its special antiseptic properties may be utilized experience may determine, but even the simple fact that a pleasant antiseptic, harmless in operation on the tissues, can be passed through the body in a short time is one of both considerable moment and interest. That its antiseptic properties are manifested as an antifermentative agent in the urine has been proved by the researches of Mosso and Stadelman. It does not appear that this fermentative retarding influence of saccharin, from which we might have expected so much in cases of chronic cystitis, has as yet been shown to act curatively in this affection. But there are numbers of cases of rapidly-decomposing alkaline urine in which early fermentative changes promote the decomposition, when, it is only reasonable to argue, it would have a retarding and therefore beneficial action.

It is as yet rather a matter of surmise how we may apply the properties of saccharin in the treatment of various affections. In the *Medical Press* for October 12, 1887, DR. H. MACNAUGHTON JONES gives a number of indications for the therapeutic employment of this drug which are worthy of attention. So far, we naturally recur at once to true diabetes and those transient glycosuric states in which there are distinctly fermentative tendencies in the blood, as, for example, in epidemic furunculus and anthrax, and as we find frequently proved by the boils or carbuncles of diabetes mellitus. Careful experiments have shown that saccharin in solution greatly retards the fermentative progress of torulæ, and it would also be interesting to know what special influences on schzo-phytes or micro-bacteria solutions of saccharin possess. It has long been the desire of the physician to be able to administer in such acute infective diseases as smallpox and typhus fever antiseptic and antifermentative remedies which would not nauseate and might be palatable or capable of being disguised, and which in combination with antipyretic medicines would not interfere with the action or administration of these latter. It seems that, if we cannot yet assert that we have arrived at this much-desired object in this instance of saccharin, at least its discovery has shown that the acquisition of such an antiseptic as that referred to is possible. In the diluents, mannite, sugar of milk, and gluten, we have three most use-

ful means of administering saccharin therapeutically or dietetically in solid form. The tablets before alluded to are composed of saccharin, carbonate of sodium, with or without some other medium, as mannite. Powders ready prepared with the same diluents of various strengths may be had. Half of one of these pellets will be quite sufficient for the small cup of tea or coffee.

In gout, the necessary dietary may be made more bearable by the employment of saccharin; so, also, in the bladder-affections of old age and in biliousness it may be employed with advantage. In many cases of gastric catarrh, skin-affections, eczematic skin-affections in children, where saccharin food is counter-indicated, saccharin may be availed of for sweetening food and disguising the taste of medicines. In addition to these uses of saccharin, its value in pharmaceutical practice promises to be very marked. The mixture of six drachms of tincture of chloride of iron, two drachms of four per cent. solution of spirit of saccharin, renders this valuable preparation quite agreeable to the taste; so, also, equal parts of saccharin and fluid extract of cascara sagrada disguises the taste of this valuable aperient. Thirty grains of salicylate of sodium, with thirty drops of spirits of saccharin, in seven drachms of water, becomes quite palatable; so, also, the unpleasant but useful chloride of ammonium lozenges may through its use be rendered more agreeable. Saccharin might likewise be substituted for the sugar in a compound powder of liquorice, where the large amount of the sugar now present is against its frequent use as an aperient. The iodide of iron is, like the muriate, well disguised, and is a more permanent preparation when made up with saccharin than the present syrup.

In this connection the following notes as to the chemical properties of saccharin, published by MR. A. D. GRAVILL in the *Pharmaceutical Journal and Transactions*, are of interest. Saccharin now occurs as a very pale yellow, nearly white, amorphous powder, free from grittiness, but giving a distinct sensation of roughness when rubbed between the fingers. It is not entirely free from odor, but this is very slight and not at all objectionable, reminding one of a very slight flavor of essential oil of almonds. Its taste is intensely sweet and persistent, which in the raw state is followed by a slight harshness upon the tongue and palate. The sweetness is very distinct when diluted to 1 in 10,000. Under the microscope it presents no definite form of crys-

tallization. A temperature of 100°C ., even if continued for some time, has no perceptible effect upon saccharin; it loses no weight, and undergoes no physical change. It fuses at a temperature of from 118° to 120°C ., and at 150°C . forms a clear light yellow liquid, which boils a few degrees higher. At the latter temperature dense white fumes appear, and a condensation of tufts of acicular crystals (some well defined) is found upon the cool surface of the apparatus. These crystals, except for a slight sweetness of taste, correspond in characters and tests to benzoic acid. The sweet flavor may be due to the presence of a very small quantity of undecomposed saccharin, carried mechanically with the fumes. The escaping vapors, which are very irritable, and give a more decided odor of hydride of benzole than the powder itself, also communicate a very distinct sensation of sweetness to the back part of the palate. Heated over a flame, with free access of air, saccharin carbonizes and burns with a dull, yellow, smoky flame, leaving a residue amounting to 0.65 per cent. of sodium salts. It does not reduce an alkaline copper solution, but, like glycerin, liberates boracic acid from borax, the latter salt dissolving saccharin readily in aqueous solutions, due, no doubt, to a displacement of the boracic acid.

The strong acids, either hot or cold, show no characteristic color reaction; the compound enters solution at the boiling-point of the acid, and, in the case of hydrochloric, shows a white granular separation on cooling. Sulphuric acid develops an uncharacteristic light brown color.

The compound, like most of the organic acids, shows a characteristic reaction with ferro- and ferricyanide of potassium. In the former case no change is perceptible until boiled, when a greenish-white turbidity appears with the liberation of small quantities of hydrocyanic acid. In the latter case a trace also of this acid is set free, with the formation of a very distinct green solution, the latter reaction being very perceptible with a few drops of a 1 in 1000 solution of saccharin in water. Heated with lime, very distinct colors of benzoic aldehyde are developed.

Saccharin possesses very decided acid properties, and combines readily with alkalies or alkaline carbonates, forming andro-orthosulphamine-benzoates of the same, in the latter case at the expense of the carbonic anhydride, causing strong effervescence. These

combinations are very soluble in water, the alkaline carbonate thus forming a ready medium for the solution of this acid, which alone is so sparingly soluble. Another advantage of some importance is, that, while the harshness of flavor perceptible in a simple solution of the acid is destroyed, the great sweetness appears to be distinctly intensified and refined.

The following shows the solubility of the saccharin in the various liquids quoted, all, with the exception of the boiling water, being taken at 60°F . :

Boiling water.....	0.60	parts per 100 by volume.
Cold "	0.20	" " "
Alcohol, .800.....	4.25	" " "
Rectified spirit, .838.....	3.20	" " "
Ether, .717.....	1.00	" " "
Chloroform, 1 49.....	0.20	" " "
Benzene.....	0.40	" " "
Petroleum ether.....	Insoluble.	

It is also sparingly soluble in glycerin and fixed oils, and, to a greater or less extent, in volatile oils. Benzoic aldehyde dissolves saccharin in large quantities.

Mr. Gravill states that he was somewhat disappointed at the slight solubility of saccharin in ether, as it has been repeatedly stated to be very soluble in that liquid.

The quantity of saccharin required to communicate an agreeable degree of sweetness, like sugar, differs with the material to be sweetened, but from one-half to one and one-half grains, according to taste, will be found sufficient for an ordinary breakfastcupful of tea or coffee infusion.

EFFECTS OF HOT WATER UPON THE UTERUS.

As a result of his experiments upon rabbits, M. MILNE MURRAY, in the *Revue Médicale*, reports that,—

1. The non-gravid uterus of the rabbit is subject to rhythmical contractions, one every two minutes.

2. The introduction of water at 105° to 110°F . produces an immediate state of tetany of the uterus, lasting from five to thirty minutes.

3. The muscular contraction is accompanied by simultaneous contractions of the smaller vessels, and the organ becomes exsanguine. The contraction of the vessels disappears gradually before the muscular spasm, and is not followed by dilatation.

4. Water, at 32° to 42°F ., produces, after

thirty to fifty seconds, a less energetic spasm than water at 105° to 110° F.

5. The spasm is easily reproduced at short intervals by stimulating the uterus with hot water. It is not reproduced at a long interval by hot water.

6. A faradic current of short interruptions acts in the same way as hot water, and produces tetany.

These results serve to explain the employment of irrigation in the treatment of uterine affections.—*Medical Press*, October 19, 1887.

THE ANTAGONISM OF DRUGS.

Recent investigations render it probable that alkaloids or extractives formed from food in the gastro-intestinal canal, or from the tissues of the body, cause many of the diseases we are called upon to treat. These alkaloids or extractives arise from physiological or morbid changes, and if in undue quantity, or if not quickly eliminated, they may act like poisons introduced into the system from without. Some of these ptomaines and leucomaines produce effects similar to vegetable alkaloids, as, for instance, atropine, muscarine, or curare. Indeed, muscarine can be obtained not only from the fungus *agaricus*, but also from animal tissues.

In the *British Medical Journal* for November 12, 1887, DR. SIDNEY RINGER shows that some inorganic and organic poisons may be completely antagonized, the normal function being restored, and this being so, warrants the hope that with more accurate information we may be able to obviate the effects not only of inorganic and organic alkaloids introduced into the system, but the effects of ptomaines or leucomaines engendered in the animal body. Probably some of our success in treatment is due to our drugs antagonizing these products.

A short time ago an interesting controversy arose regarding the reciprocal (mutual) antagonism of drugs. On one side it was maintained that drugs might be mutually antagonistic, while other observers denied this statement. The former maintained that the effect of a drug might be antagonized by a second drug, which, if increased in quantity, would manifest its own individual effects, but these effects could be removed by increasing the quantity of the first drug. To take an example, atropine will antagonize the action of muscarine, and muscarine the action of atropine on the heart. To take another in-

stance, atropine will antagonize the action of jaborandi on the submaxillary gland, and *vice versa*; if, after atropine has antagonized the action of jaborandi, a further quantity of jaborandi is administered, it will overcome the action of atropine and salivary secretion will return.

Rossbach disputed this, and maintained that while one drug increases another depresses or suspends function, and the drug which increases function can never overcome the effect of a drug that has abolished function. He admitted that when atropine arrests the secretion of the sweat-glands pilocarpine may produce perspiration, but he asserts that this occurs only with a small dose of atropine just sufficient to paralyze the secretory nerves, but not the secretory cells of the gland, and that pilocarpine stimulating the cells may produce perspiration. But he maintains that a larger dose of atropine paralyzes both the secretory nerves and the secretory cells, and after this stage no amount of pilocarpine will excite perspiration.

Dr. Ringer demonstrates that the effect of a toxic dose of calcium chloride on the detached ventricle of the frog's heart can be quite antagonized by a toxic dose of potassium chloride, and, *vice versa*, that a toxic dose of potassium chloride, sufficient not only to arrest spontaneous beats, but sufficient to prevent a strong induction shock exciting any contraction, can be antagonized entirely by a toxic dose of calcium chloride, and by the careful apportionment of the two salts their antagonism can be so nicely balanced, that the ventricle will beat spontaneously and quite naturally. Moreover, a toxic dose of potassium chloride will antagonize a toxic dose of veratrine, and, *vice versa*, a toxic dose of veratrine will antagonize a toxic dose of potassium chloride, and these two substances may be given with such equipoise as completely to antagonize each other, so that the ventricle will beat quite naturally and spontaneously. So that in the case of calcium chloride and potassium chloride, and again in the case of veratrine and potassium chloride, we may have in the circulating fluid two of each series present in toxic doses without either poison exerting any apparent influence on the ventricle, which goes on beating spontaneously and normally; but, if one salt were administered singly, it would powerfully affect the functions of the ventricle to an extent incompatible with life.

Referring first to physiological antagonism, Dr. Ringer shows that if the ventricle of the

frog, or of the eel, or of the tortoise, is fed with saline solution (.66 per cent.), contractility soon ceases, and cannot be induced by a strong electric shock. On the addition of a lime-salt, even in very minute proportions, as 1 part of lime-salt to 10,000 parts of saline solution, contractility immediately returns, but the contraction is abnormal, for the dilatation of the ventricle is greatly prolonged, so that the whole contraction lasts much longer than natural. The addition of a small quantity of a potassium-salt, as, for instance, potassium chloride, 1 part in 15,000 of circulating fluid, obviates this effect of the calcium-salt, accelerates dilatation, and induces a perfectly normal beat, and with such a solution good contractions are sustained for several hours. Here, then, we have an antagonism between lime- and potassium-salts, affecting, however, only one part of a contraction,—namely, the relaxation of the contracted muscle.

Not only are the salts of these two substances—potassium and calcium—antagonistic in physiological doses, but they are likewise antagonistic in toxic quantities.

If to a solution capable of sustaining the ventricular contractions we add a toxic dose of potassium chloride, the contractions speedily cease, even when the ventricle is strongly stimulated. Now, on adding a toxic dose of calcium-salt, the potassium chloride is antagonized, and, if the calcium-salt is added in suitable quantity, complete contractility is restored, and the ventricle beats spontaneously and normally; and, *vice versa*, if we add to the circulating fluid a toxic dose of calcium chloride, we greatly prolong the duration of the contraction, and especially retard relaxation; but, on the addition of a toxic dose of a potassium-salt, these lime effects are obviated, and normal spontaneous contractions ensue.

Here, then, we have instances where two substances in toxic doses so antagonize each other that natural beats occur; while either substance, added alone to the circulating fluid, powerfully affects the functions of the ventricle to an extent incompatible with life.

We are able, however, to analyze the antagonism between these salts more minutely still. During a contraction, four distinct sets of changes occur in the muscular tissue of the ventricle,—namely, changes occurring during the latent period, during the period of contraction, during the period of relaxation, and reparative changes, independent of those permitting relaxation. Now, potassium-salts, like

veratrine-salts, greatly retard these reparative changes, so that in a ventricle poisoned by potassium chloride, these reparative changes are very slowly performed, and hence, after the completion of contraction and relaxation, if a subsequent contraction is soon induced it is a very weak one; or, if the stimulus is too soon applied to the ventricle, no contraction may occur, and cannot be induced till a short time has elapsed, and then the amount of contraction depends on the length of the diastolic pause. This effect of potassium chloride on the reparative changes a calcium-salt completely obviates.

We see, then, that a potassium-salt accelerates relaxation but retards reparation, in both these respects being antagonized by a calcium-salt, and *vice versa*. Another antagonism between potassium- and calcium-salts still remains to be noticed. If a ventricle be allowed to remain without contracting from a few seconds to a minute, then, on exciting it, the first contraction is weak, and the subsequent contractions grow gradually stronger till normal contractions occur. This staircase character of beats depends on the action of the potassium-salt in the circulating fluid, and the degree in which it occurs is in proportion to the relative amount of potassium chloride in the circulating fluid. A calcium-salt, as calcium chloride, quite obviates this effect. If sufficient calcium chloride be added, no matter how long the ventricle remains without contracting, the staircase character of the beats is prevented, or is very slight indeed.

Strange as it may appear, veratrine affects the ventricle much after the manner of lime-salts. Thus, added to simple saline solution, it will restore contractility; and further, like lime, it greatly prolongs the duration of the contraction, and especially delays relaxation of the contracted ventricle, and, like lime- and potassium-salts, we find veratrine- and potassium-salts are mutually, or reciprocally, antagonistic.

For instance, the addition of veratrine to the circulating fluid produces either great irregularity in the contractions, or very great delay in dilatation, according to the temperature of the room. This irregularity a toxic dose of potassium quite removes, and good spontaneous contractions return. Further, if the ventricle is greatly weakened or arrested by adding a toxic dose of potassium chloride, veratria quite antagonizes the potassium chloride effects, and restores spontaneous and normal contractions.

Barium- and calcium-salts, as might be expected from their chemical relationship, have many actions in common. It is interesting, too, that, although lime-salts and barium-salts both broaden the beat, causing fusion and contracture, barium-salts effect this more powerfully than calcium-salts, yet after barium has produced its effects, on the addition of a calcium-salt, instead of obtaining the sum of their united action the effects common to both salts become less. In other words, lime takes possession of the muscular tissue, excluding the action of the barium-salts. It would appear, then, that two substances affecting the same tissue in the same way, when administered therapeutically, one will not necessarily intensify the action of the other, but may replace the other, and we get the action of only one substance, and this, while having a greater affinity for the tissue, may induce a less physiological effect.

These results are very interesting, and have considerable importance, both physiologically and therapeutically. Thus, we have seen that barium and calcium both exert an influence in the same direction, but the barium molecule is the more active in respect of its influence of the ventricular contraction. If, however, we bring both molecules into action simultaneously, we see that the resultant effect, instead of being greater than with either component, is less, the lime displacing the barium and inducing its less physiological disturbance. The relation of this subject to practical medicine is very clear and important, for on the question of the combination of two drugs we must remember that the joint action of two drugs functionally similar is not necessarily greater than that of either separately, and may be even weaker than one of them given separately; for in some instances two substances having the same action do increase the action of either separately, so that we get the sum of their joint action. This is the case with lime and veratrine.

So far we have seen that substances may be antagonistic in two ways. The first we may term physiological, for instance, where two substances inducing an opposite physiological effect on a tissue may be so adjusted that the poisonous action of both is prevented. In the other case the antagonism is probably chemical, and one substance may by a stronger chemical affinity displace another poison, and this may occur, and, indeed, is most likely to occur, when both substances are chemically related and have a similar physiological effect.

But there are other ways in which a substance may act as an antidote.

A lime salt in the circulating fluid, we have seen, is necessary for the contraction of cardiac muscle. Now, a soluble oxalate destroys function, in part by combining with the lime in the circulation, and rendering it insoluble and so inoperative. Here, then, we obviate the poisonous effects of an oxalate by adding lime to the circulation. There are still, however, other ways in which we can antidote a poison. A soluble oxalate not only withdraws function by withdrawing lime, but is directly to some extent poisonous to the cardiac muscular tissue; and this poisonous action we obviate by the administration of a lime-salt, which combines with the oxalic acid, forming an insoluble, and therefore inoperative, compound. To take another instance, soluble barium-salts are poisonous to the cardiac muscle, and arrest the ventricle in systole. Now, the addition to the circulating fluid of a solution of sulphate of sodium will precipitate the whole of the barium, and the ventricle will speedily resume its normal contractility, even though the contractions had been suspended for an hour. The effect of the sodium sulphate is very rapid. Barium-salts, one would think, can prove poisonous only to the tissues after more than enough has been absorbed to combine with the whole of the sulphuric acid in the blood and tissues, and it is possible that part of the action of a barium-salt may be due to the withdrawal of sulphuric acid from the tissues.

Finally, there is another way by which the poisonous action of some substances can be greatly lessened. Some poisons prevent the changes which take place in the exercise of a function, as, for instance, the contraction of the muscle. They do not destroy the structure, they only suspend function, and this power they possess only when the poison reaches a certain percentage of the circulating fluid. If the fluid is diluted, then the percentage amount becoming less, the poisonous action is greatly reduced. This is the case with potassium and most other salts. This fact probably explains the effect of bleeding, which has been successfully employed in some cases of poisoning, and is highly successful in uræmia. The loss of blood induces a rapid absorption of the intercellular fluid and water from the gastro-intestinal canal, and so diluting the poison, lessens or removes the symptoms. If bleeding proves unsuccessful the influence of dilution suggests transfusion of a saline solution, also the free ad-

ministration of liquids by the stomach, methods Dr. Ringer long ago suggested.—*Brit. Med. Jour.*, November 12, 1887.

CREOLINE: A NEW DISINFECTANT.

DR. F. VON ESMARCH, assistant at the Royal Institute for Hygiene in Berlin, publishes an important and interesting article in vol. ii., Nos. 10 and 11, *Centralblatt für Bacteriologie*, etc., upon a new disinfectant—*creoline*—which will at once arrest the attention of students, the more especially so since Prof. Dr. Eugene Fröhner, of the Royal Veterinary High School, has confirmed, by the most careful experiments, the views expressed by Dr. von Esmarch. Dr. Fröhner describes the results as "astonishing," both in regard to internal administration and external application, and believes that its use in mange and itch will be of value in political economic studies. Experiments were made with creoline and carbolic acid with decomposed material, Asiatic cholera, typhoid, and anthrax; the minutest tables of analysis are given in seconds, minutes, hours, and days, all the changes being noted, and, with the sole exception of the bacilli and spores of anthrax, creoline proved itself to be the most powerful germicide. As yet, Dr. von Esmarch is unable to say why it fell behind carbolic acid in anthrax. In the first trial the results were equal, but in the second experiment creoline did not manifest such germicidal power as the carbolic acid. Dr. von Esmarch says, "All of my liquids were thoroughly decomposed, and emitted a most offensive odor. This disappeared almost entirely when a small quantity of creoline was added, and the mixture agitated every few seconds. The same addition of carbolic acid produced no effect, even when a much larger percentage was used." He also adds, "The action of *creoline* preparations surpasses by far those of carbolic make."—*Boston Medical and Surgical Journal*, November 10, 1887.

THE ANTISEPTIC TREATMENT OF WOUNDS.

MR. W. J. PENNY summarizes the important points in the antiseptic treatment of wounds as follows:

"To recapitulate the antiseptic or aseptic treatment of wounds: 1. Arrest all hemorrhage, thus preventing the accumulation of blood-clot, the nidus for development of

micro-organisms. 2. Remove all foreign bodies, such as dirt, detached pieces of bone or tissue. 3. If foreign bodies or micro-organisms have gained an entrance, purify thoroughly with an efficient antiseptic. 4. Provide very free drainage, in the most dependent part if possible. 5. Bring the parts into accurate apposition, like to like; but carefully avoid tension, especially of the edges of the wound or in damaged or unhealthy tissues. 6. Apply a large dressing sufficiently impregnated with a reliable antiseptic, and very absorbent and elastic. 7. Bandage firmly and evenly to get elastic compression. 8. Elevate the part to lessen the blood-pressure and effusion while the vessels are weak from the injury. 9. Give absolute rest; change the dressing as little as possible. Visible discharge is the indication if the dressing is reliable. 10. Attend to the general health and give a free supply of good food and fresh air, in this way promoting the resisting and healing power of the tissues. Recognition of these principles, their study and adoption, are of as much or more importance to a surgeon than a knowledge of anatomy or manual dexterity. By them you take surgery out of the region of chance and make it much more an exact science. If you happen to have an infectious case, let me impress upon you, gentlemen, not to look on it as an unavoidable accident, but recognize it as being due to some mistake in your chain of treatment, to be found out and in the future guarded against. None of us are free from mistakes or accidents; the best surgeon is he who has the least number, who recognizes that he is not infallible, but strives to discover his mistakes, and from them learns lessons for his future guidance."—*Lancet*, October 29, 1887.

ACETANILIDE AND ANTIPYRIN IN THE TREATMENT OF EPILEPSY AND CERTAIN ALLIED DISORDERS.

The control of antipyrin and acetanilide manifest over the nervous system has led many observers to use them in the treatment of a variety of nervous affections. Medical journals at home and abroad have devoted considerable space to the reports of cases so treated, which, as yet, are, however, so few in number as to scarcely warrant the deduction of any positive conclusions. DR. JOSEPH LEIDY, JR., in the *New York Medical Journal* for October 29, 1887, reports a number of cases of epilepsy, hystero-epilepsy, hysteria, insomnia, neuralgia, and lumbago in which

these drugs were used, with results which, though encouraging, are hardly sufficient to warrant their maintaining the position which many have alleged for them. The cases of epilepsy were selected irrespective of their causation or variety. Those of *tabes dorsalis* were all of syphilitic origin. Headaches were mostly of the congestive type. Neuralgias consisted of the trigeminal, intercostal, visceral, and suboccipital varieties. Notes of thirteen cases are published, which were evidently those in which the results of these drugs were most favorable. Dr. Leidy summarizes his results as follows :

Of thirty-six patients with epilepsy, fourteen were greatly benefited by acetanilide and three by antipyrin. Acetanilide aggravated the attacks in four cases.

In five cases of hysteria antipyrin proved itself a useful remedy, and worthy of further trial ; the results from acetanilide were negative.

In three cases of hystero-epilepsy the results from both drugs were negative.

In four cases of insomnia the use of acetanilide was attended with some benefit. Antipyrin failed signally, although in one case, due to nervous exhaustion attendant upon sexual excesses, it proved effectual in relieving the headache and producing a refreshing sleep.

In fifteen cases of supraorbital and suboccipital neuralgia, nine were greatly relieved by acetanilide and four by antipyrin.

In two cases of intercostal neuralgia acetanilide gave immediate relief.

In five cases of nervous headache great benefit was obtained from acetanilide. Antipyrin proved of doubtful utility.

Of seventeen patients with sciatica acetanilide benefited eight ; negative results with the remainder.

Of ten cases of lumbago, seven were relieved temporarily and two permanently by acetanilide.

In six cases of rheumatism pain was greatly relieved by acetanilide, and in one case by antipyrin.

In five cases of *tabes dorsalis* the gastric crises and headache were relieved by acetanilide, formication disappeared in four cases under observation ; in one case no benefit was derived.

In conclusion, it may be said,—

1. *In epilepsy*, when acetanilide does good, its action is rapid ; it does so by diminishing the violence and number of the attacks, and, as it has a tendency to aggravate the disease

in some cases, the nature of which could not be determined, although it occurred only in those cases with a marked hereditary predisposition, its use should not be continued over two weeks unless some benefit has been obtained.

Cases of *petit mal* prove the more amenable to treatment, though in two cases of *haut mal* the drug was of great service. Antipyrin has proved itself inferior in every respect to acetanilide. Neither remedy is to be used as a substitute for the bromides, but simply as an addition to the limited number of drugs now at our command.

2. *As an analgesic* acetanilide has proved itself a valuable remedy ; the majority of the cases treated have been benefited. Antipyrin appeared beneficial in several cases, though it is not to be ranked with acetanilide.

3. *As a hypnotic* further experimentation is needed, but from the cases under observation both drugs are of doubtful efficacy.

In the administration acetanilide was used first and considered the safer drug. From acetanilide there are no objectionable after-effects, except it be cyanosis, which only occurs after the ingestion of large doses, and usually in cases attended with marked elevation of temperature ; on the other hand, collapse, disturbances of the gastro-intestinal tract, respiration, and circulatory apparatus, with fatty metamorphosis of the liver and kidneys (Dr. Porter, in *New York Medical Journal*), prove sufficient objections to the use of antipyrin.

The dose of acetanilide varied from gr. iii to x ; that of antipyrin from gr. x to xv.

TERPINHYDRATE.

DR. S. RABOW says in the *Therap. Monatshefte* for August, 1887, that among the many new remedies which have found their way into therapeutics, terpinhydrate and terpinol have chiefly come into use. If oil of turpentine and water be allowed to stand for a time, upon the walls of the vessel will be found small needle-like crystals. These are nothing else than terpinhydrate, or more correctly, terpin-dehydrate ($C_{10}H_{14} \cdot 2H_2O + H_2O$).

The production of this interesting body is as follows : A mixture of four parts of rectified oil of turpentine, three parts of alcohol ($80^{\circ} C.$), and one part of nitric acid is put in large, shallow porcelain dishes and allowed to stand for three or four days. The crystals which have formed are then collected and allowed to drain thoroughly ; they are then pressed between absorbent paper, and are re-

crystallized in a cold solution of ninety-five per cent. of alcohol. The product is about twelve per cent. of the original turpentine oil.

Terpinhydrate is a large, colorless, odorless, rhombic crystal, having a faint aromatic taste. It is with difficulty dissolved in cold water and turpentine oil, more readily in hot water, alcohol, ether, or carbohydrates.

The first careful examination of its physiological actions was conducted by Lépine, of Lyons, in the year 1885. He found that the drug had a similar action upon the respiratory organs as the oil of turpentine, and also acted similarly both upon the kidneys and nervous system. Lépine states that small doses (.2 to .6 grm. = 3 to 9 grs.) increase the bronchial secretions and facilitate expectoration. Large doses diminish the secretions and lessen the respirations to a marked degree, and produce a cessation of expectoration. The author has used the drug in over two hundred cases of bronchitis, using the above-named small dose, almost invariably obtaining the desired results.

Germain Sée found that large doses were useful in different states of phthisis pulmonalis in the checking of the copious secretions.

In cases of bronchitis where the bronchial tubes were surcharged with secretions and when dyspnoea existed, the remedy always acted with certainty. Also in fresh hæmoptæ it proved to be an invaluable hæmostatic, as it produced its results more rapidly than ergotin.

Kien, Clermont, Ferreira, Morra, Chéron, and others have recently referred to its value in diminishing the secretions in bronchitis and bronchocele. The usual dose advised being from .75 to 1 grm. (12 to 15 grs.) daily.

Guelpa alone reaches different conclusions. He gives but little weight to the effect of terpin upon the mucous membrane of the bronchia or its effect on the kidneys, and hence throws it aside, substituting for it terpinol.

Lépine also found that terpin acted upon the kidneys, and thus could be regarded as a direct diuretic.

Small doses are sufficient to cause a marked increase of urine. Its value for affections of the kidneys is judged to be highly probable, as large doses given to dogs have resulted in hæmaturia and albuminuria. Its asserted value in cystitis and chronic gonorrhœa requires additional evidence.

The well-known property of turpentine oil of relieving certain neuralgias, especially of the ischias, etc., is observed by Lépine to be

also a property of the terpinhydrate. He found in many such cases that doses of 1 grm. (15 grs.) of terpin afforded as much relief as would be given by several grammes of the oil of turpentine. According to our present knowledge, the use of the drug may be continued for a long time without producing injurious effects.

The only disagreeable accompanying symptoms which have been observed (and these rarely) are purging, pain in the epigastric region, and meteorismus.

In order to avoid these symptoms it is advisable to take the remedy during meals.

The size of the dose depends very naturally upon the nature of the result desired. Daily doses of .2 to .5 grm. act as an expectorant, whilst doses of 1 grm. *pro die* check the secretions, and may be also used to alleviate pain. It may be given in the form of pills or in wafers, or in a dilute alcoholic solution.

R Terpini hydrat., 3 grm.;
Sacch. alb.,
Mucil. gum arab., q. s.
Ut f. pilul. No. xxx.
S.—One pill three times a day.

R Terpin. hydrat., 10 grm.;
Spirit., 150 grm.;
Aq. dest., 100 grm. M.
S.—One tablespoonful three times a day.

R Terpin. hydrat., 5 grm.;
Glycerin, 30° C.,
Spirit., 95° C.,
Syrup simpl., aa 70 grm.

(The terpin should be dissolved in the warm glycerin, and the mixture of alcohol and syrup. simpl. should be added, and the whole well shaken. Each tablespoonful contains about .5 grm. of terpin. *Vigier and Chéron.*)

The author's experiences with terpin hydrate are very favorable, and sufficient, he says, to warrant his giving conclusive testimony as to its value. As, however, many questions upon the subject have been directed to him, he went still further and instituted inquiries among several practitioners who had large and valuable opportunities of observing its effects. He speaks of being especially indebted to Dr. Lazarus, of Berlin, and to Dr. R. Hausmann, of Meran, for a full and interesting statement of their experiences. Dr. Lazarus writes as follows:

"I consider the pill form the most useful, as in the solution so large an amount of alcohol is necessary that the effects of the latter are considerable. I have also seen that even doses of 1.5 to 2 grm. daily, when taken in pill

form, and during meal-time, produce no unpleasant symptoms. Indeed, I believe that only large doses can be depended upon to give an assured result.

"When an intense irritation of the mucous membrane of the bronchi is observed, accompanied by a meagre secretion, the use of terpin is indicated. It always increases the secretion, making it more watery. It lessens the irritation and aids and facilitates expectoration. In eight to fourteen days the catarrhal symptoms gradually disappear. My observations, which have resulted from wide experience, will be endorsed by very many of my colleagues who have largely used this remedy."

Dr. Hausmann does not write quite so favorably. He says,—

"Sée says in the third part of his 'Medical Clinic,' page 225, 'Terpin is an energetic modifier of the respiratory mucous membrane and a strong antiseoretorium. It lessens the secretions in pulmonary catarrh and chronic bronchitis.' Although I have firmly adhered to the use of terpin in pulmonary and bronchial catarrh I have never yet observed a complete stoppage of the secretion, although I have given doses of .80 to 1 grm. daily. In nearly all the cases, although the secretion diminished with rapidity, I observed the effects to be but temporary. I have noticed, however, that patients have been able longer to endure the use of terpin than turpentine oil. Sée believes that after a continued use of the drug no gastro-intestinal troubles result; but my opinion is that this is questionable.

"I have found neither the pill form nor the alcoholic solution so valuable as the practice of giving it in wafers.

"As a deodorizer the oil of turpentine is decidedly better than terpin."

JHAMBUL—A NEW REMEDY FOR DIABETES.

The jhambul is a small evergreen tree, indigenous to the humid region of India, especially to the Malayan peninsula. Both the bark and the seeds in this plant would seem to possess medical properties, the seeds apparently being more active. Dr. W. H. MORSE, writing in the *Maryland Medical Journal* for October 29, 1887, states that he has employed the powder of the bark and seeds in doses of 5 grains three times a day. He claims that the effect of this drug is to increase the vaso-motor and reflex functions of

the spinal cord, producing a general rise in blood-pressure, especially in the renal arteries. Nausea is occasionally produced, and respiratory movements are increased in number and depth and intestinal peristalsis increased. In diabetes it is said to lessen the specific gravity and quantity of the urine and diminish the amount of sugar, while the abnormal thirst and other unpleasant symptoms of the disease are overcome. Before endorsing these statements, which we must admit are apparently confirmative of other papers on the same subject, we must wait for extended experience. To be sure, if the drug proves successful in arresting these diseases, we can afford to laugh at the explanation of its action, given as follows by Dr. Morse: "The formation of sugar in the urine is arrested by a prevention of the formation of starch."

ANTIPYRIN IN SEA-SICKNESS.

The Paris correspondent of the *Lancet*, November 12, 1887, writes: "The Société de Biologie has devoted part of its last two sittings to the discussion of the different means recommended for the relief of sea-sickness. A note was presented by M. Hentz on the best way of administering cocaine, and received without any expression of opinion. M. Dupuy said that sea-sickness was more severely experienced by dyspeptic subjects, and particularly those who had dilatation of the stomach. In eleven cases he had given antipyrin in doses of from 2 to 3 grammes for a few days before embarking, and the patients had all informed him that they had been free from sickness. M. Dastre said he had instituted a series of experiments upon animals, imitating as closely as possible the movements of 'pitching' and 'rolling.' He had found that there was an incredible displacement of the abdominal viscera, which strike against the diaphragm and cause the gastric uneasiness. The body struggles with these displacements by means of muscular contractions, and the respiratory rhythm accommodates itself to them. Professor Brown-Séquard remarked that this theory of visceral displacement was very old, and one which he had been able to verify in his frequent passages across the Atlantic. It was evidently the view entertained by Wollaston, who recommended Arago to place a pad over his stomach when he crossed the Channel. M. Maurel had no doubt as to the influence of the stomach, but thought the cerebral shock

also played a part in the determination of the symptoms, inasmuch as the sickness always occurs when the boat is going down, never when it is being lifted up. The best preventive was lying on the back. Beyond the statement that sea-sickness is associated with dilatation of the stomach, and the hope held out by M. Dupuy that in antipyrin we now possess a remedy for it, there was nothing new in the views expressed by the different speakers. I have referred, however, at some length to the subject, because, my own seafaring experience has been somewhat extensive, extending over intervals during the last fifteen years, and including some kind of trial of every new drug recommended. Until a month ago the plan I always recommended was to take bromide for some days before going on board, and, if discomfort was felt notwithstanding, the dorsal decubitus was to be adopted. This, together with champagne, is generally what the transatlantic captains advise. In a recent trip to New York I tried two other remedies. The surgeon of the ship recommended me tincture of capsicum, and I had also taken a supply of antipyrin. As far as one case goes the result of the antipyrin was most satisfactory, and I can to this extent endorse the experience of M. Dupuy. The capsicum was also serviceable as a palliative, for several persons who had taken it continued to ask for it, but it did not arrest the sickness like antipyrin. A fellow-passenger who suffered from dilatation of the stomach with *clapement* was not sick at all."

THE PHYSIOLOGICAL ACTION OF THE OIL OF TURPENTINE.

Notwithstanding the fact that the oil of turpentine has been used for many years with success in certain morbid conditions, but little effort has been made to study its relation with the animal organism other than by the bedside. DR. H. A. HARE, in the *Medical News* for November 19, 1887, relates a few experiments which he has made in this connection, of which the following is a summary:

1. The oil of turpentine in small doses, resembling those ordinarily given in practical medicine, produces an increase in the number of the cardiac beats due to a direct stimulant action on the heart.
2. In larger doses it produces distinct slowing of the pulse, due to a stimulation of the pneumogastric or inhibitory centre.
3. That its influence on the vaso-motor

system, if at all, is very slight, either with large or small doses.

4. That poisonous doses (5 c.c. to 10 c.c.) (≈ 80 to 160) produce death by cardiac failure when injected directly into the jugular vein.

5. That the drug in small doses increases reflex action somewhat, but in large doses decreases it, the increase being due to a stimulation of the spinal cord, and the decrease due to depression of the sensory side of the cord and afferent nerves.

CHLORIDE OF AMMONIUM IN THE TREATMENT OF HEPATIC DISEASE.

In his monograph on the treatment of hepatic disease, SURGEON-GENERAL W. STEWART showed that chloride of ammonium in hepatic congestion produces a local depletion from the portal capillaries with each succeeding dose of the drug, and at the same time, by a species of auto-transfusion from the portal into the general circulation, the entire portal system, from its origin in the venous radicals in the intestinal mucous membrane, is freed from engorgement, and thus the liver is not relieved from congestion and its functions restored, and the occurrence of dysentery, so apt to supervene in hepatic congestion, and particularly in tropical abscess, is prevented. The depletion of the congested abdominal viscera thus effected, unlike that by leeches or other local means, is not attended with depression or loss of vital fluid, a loss which, in such cases, is but ill borne. Since the publication of his first paper on this subject in 1870, Dr. Stewart states that his experience with this drug has been quite extensive, and he is able to confirm the testimony of Murchison, that in doses of 20 grains two or three times daily it induces free diaphoresis, increases the flow of urine, diminishes the portal congestion, and relieves hepatic pain. He also believes that it stimulates the absorbents, especially those of the liver, and would seem to affect absorption of hepatic abscesses.

The symptoms produced by this drug in hyperæmia of the liver are stated by Dr. Stewart to be characteristic, and are specially to be noted, since, so far from being evidences of the medicine disagreeing, they are signs of its successful action. They are only evident as long as the liver is congested, and Dr. Stewart even goes so far as to claim that their occurrence after the administration of the drug in any given obscure case may be considered

diagnostic of hepatic disease. The symptoms now to be described occur shortly after the medicine is taken, in from five minutes to half an hour. Sometimes a "shock" is felt, or as if "something gave way" in the side; at other times a succession of shocks is experienced in the hepatic region, accompanied or not by a pricking sensation ("pins-and-needles"), or as if cold water were trickling down the side; or the action is described as that of "a pulling" from one hypochondrium to the other, or from the margin of the right costal arch upwards and backwards, as if through the liver; or a "clawing," "working," or "gnawing sensation" is spoken of as felt by the patient. When a single sharp shock is experienced in a debilitated, nervous, and susceptible subject, it is often severe. Immediately afterwards, however, the severe hepatic pain vanishes, and never again returns with its original severity; and with each succeeding dose a sensation of "pulling" only is felt in the hepatic region, till at length all sensible action ceases with the removal of the hepatic congestion, the case being one of simple enlargement of the liver. With the local actions excited in the liver and related parts—through reflex nervous action—when a full dose of the drug has been taken, motor impulses are similarly communicated to the muscles of the intestinal canal, causing its peristalsis to become more rapid and energetic, as evidenced by the "twisting" and other movements experienced in the situation of the duodenum, or all over the abdomen, and which at times are more sensibly felt in particular parts, in the situation of the umbilicus, or in the inguinal region. Simultaneously with or closely following the above phenomena, the abdominal muscles may be thrown into tonic contractions, which are perceptible at times to both sight and touch; and pulsatile movements are felt, and are sometimes visible, along the margins of the right inferior ribs. All these phenomena are highly purposive, contributing, with other vital actions and processes brought about by the drug, to diminish portal congestion, restore the diseased liver to a healthy state, and afford relief to the entire system.

The following is a summary of the auxiliary treatment, diet, and management of congestion of the liver, and mode of administering the ammonium chloride:

Bearing in mind what has been said of the therapeutic effects of the drug in hyperæmia of the liver, and the indications to be drawn from the symptoms and pathology of the dis-

ease, the first thing to be done is to put the patient to bed, there to remain, in acute cases, during the whole course of the disease; in short, till the congestion, pain, and general and local distress and uneasiness shall have subsided, and that the patient may have no occasion to quit his bed, a bed-pan and urinal should always be at hand, as well as a trusty attendant to minister to his wants. By the recumbent position and the avoidance of all sudden and violent movements, mechanical rest and support are given to the enlarged, weighty, and oppressed or painful organ. The horizontal position, too, facilitates the auto-transfusion of the blood from the portal system, through the hepatic capillaries, into the general circulation, under the influence of our special remedy,—a process which will be better understood now that the reader is in possession of the details of the local signs expressive of the effects produced by it: the excitation of the muscles of the intestinal canal to increased peristalsis, and those of the abdomen and thorax surrounding the liver to tonic contractions, by which muscular pressure is brought to bear on the radicals of the portal vein, and on the liver and gall-bladder, which not only hastens forward the entire portal stream, but may squeeze out of the liver some of the superfluous blood, as well as free it and the gall-bladder from retained bile. By the increase of the functional activity of the liver, as well as the increased flow of blood to the skin, as a further result of its action, a *vis a fronte* is brought into play in aid of the *vis a tergo* above described, by which the equilibrium of the entire circulation is speedily restored. The free perspiration induced by the drug is also promoted and chills avoided by the rest and warmth of bed. It is to this latter stage of its operation that much of its value is due,—the free diaphoresis favors sleep, while the nervous system generally is exhilarated and soothed, and the patient almost entirely relieved from all his distressing symptoms.

It is equally important that the congested (or, it may be, inflamed) liver should enjoy, as far as possible, physiological rest. To this end, on no account must solid food be given to the patient, and wine, beer, or other alcoholic stimulants must be strictly prohibited. The diet must be of the least irritating character, and only small quantities of milk, beef-tea, or farinaceous articles should be taken at a time. Barley-water may be taken freely as a drink. If there be diarrhoea, the patient passing frequent loose bilious or dark-colored

motions, a pill composed of two grains of mercury and three grains of Dover's powder, repeated every two hours till four or five have been taken, will be found the most effectual means of checking it without the risk of setting up gastro-intestinal irritation. Looseness of the bowels, however, does not contraindicate the use of the chloride of ammonium,—indeed, it is in itself the best remedy in cases of diarrhoea associated with hepatic congestion. The only condition which contraindicates the immediate use of the drug in acute cases is the existence of a combined hot and dry state of the skin with pyrexia. Under such circumstances its use should be preceded by a few small and frequently-repeated doses of solution of acetate of ammonia, till the skin is rendered moist and perspirable. Pyrexia being absent,—or, if present, the skin being soft and perspirable,—the chloride should be at once commenced and persistently administered in doses of 20 grains twice or thrice daily, with strict attention to the rules above laid down as to diet, rest in bed, etc., till it no longer produces sensible effects, or till all local uneasiness, hepatic pain, and tenderness have subsided. Fomentations or hot bran-bags applied to the seat of pain in the side will be of use in aiding determination to the skin generally, as well as by their local soothing effects.

Dr. Stewart reports in the *Lancet* for October 22, 1887, typical cases of that state of the disordered liver, which, commencing in imperfect discharge of the liver-functions, when long continued terminates in congestion of the portal veins and engorgement of the vital ducts. If this stage of the disease be neglected its tendency is to terminate in subacute inflammatory reaction with marked tendency to suppuration. In this, as in other forms of tropical hepatitis, ammonium chloride would appear to be the one special remedy, and the statements of Dr. Stewart would appear to be confirmed by the statistics and cases published in his monograph.

These results of Dr. Stewart we believe are in unison with those of other practitioners. The remedy has been used in chronic torpor of the liver and chronic hepatitis to some extent in this country with asserted good results, and is referred to in such diseases in at least some of our standard treatises.

METHYLAL.

DR. B. W. RICHARDSON, in a paper read before the Medical Society of London on

October 24, 1887, continues his studies of methylal (*Medical Press*, November 2, 1887). His conclusions may be summarized as follows:

1. Methylal is hypnotic and antispasmodic.
2. Its action lies between ethylic alcohol and ethylic ether. It may be looked on as a volatile alcohol, and resembles closely pure methylic alcohol in action.
3. It can be administered by inhalation as vapor, by hypodermic injection, and by the mouth in aqueous solution.
4. It reduces arterial tension, and by local action excites glandular activity.
5. The sleep it induces is not profound unless the dose be excessive. It is quickly eliminated, and leaves no serious effects. It causes no vomiting or stomachic disturbance.
6. A fatal dose by inhalation kills by complete relaxation of the muscular fibres of the heart, leaving the heart distended with blood and the vascular organs intensely congested.
7. It combines with ether, alcohol, amyl nitrite, and many other remedial agents with which it acts in concert, while it equalizes their action by reason of its own solubility.
8. Its tendency is to maintain the fluidity of the blood, and it may, therefore, be of service in combination with ammonia.
9. It promises to yield a safe and effective anæsthetic mixture in combination with ether.
10. It reduces the animal temperature, but not to the same degree as common alcohol.
11. Used as an anodyne it passes out of the body without producing organic injury when not often repeated.
12. But, like all bodies of its class, it must be given in increasing quantities in order to keep up its effects, and it would soon yield evil as well as good by its habitual use in the community at large.

THE EFFECTS OF ANTIPYRIN ON CHILDREN IN SCARLATINA AND BRONCHITIS ACUTA.

Although the value of antipyrin as an antipyretic has been largely discussed and almost universally acknowledged, its use in the above-named diseases has been almost, if not entirely, disregarded. Can it be that the drug has not been tried in these serious ailments, which are always accompanied by a high fever? Or has the fear of collapse, which sometimes occurs, caused the physician to abstain from its use? The only use to which antipyrin has been put among children (at least the only account published) was in

whooping-cough, where small doses were recommended (*Therap. Monatshefte* for May, p. 201). The result of the experiences of DR. JULIUS FRIEDLAENDER, which appeared in the *Therapeutische Monatshefte* for August of this year, cannot therefore fail to be of interest to the profession. His experiments were on children under six years of age, suffering either with scarlatina or bronchitis acuta.

It may also be mentioned that the remedy was always willingly taken by the little patients when given in wine or raspberry syrup.

In scarlatina the drug did not seem to have any effect either on the duration of the disease (four to six weeks) or on the accompanying complications, with the exception of catarrh of the air-passages. On this it seemed to have a beneficial effect. This, when treated with antipyrin, was never severe. In every case, after taking the remedy from one to three times in twenty-four hours, in doses of .6 grm. (9 grains), the children seemed brighter, ceased gritting their teeth, and gladly took milk, wine, or bouillon, and were also willing to be freely examined, which had not been the case before. In nearly every case perspiration soon began, was followed by tranquil sleep, and in about two hours the temperature had sunk to about 38.5° C., the pulse was about 120, respiration easier and not so rapid. These results took place in some cases after a single dose of .6 grm. (9 grains), but the effects of the drug only lasted from eight to ten hours, according to the patient's age, and the dose had to be repeated once or twice in twenty-four hours. All the children (fourteen) recovered.

In one case of otitis interna suppurativa bilateralis, accompanied by extreme restlessness, gritting of the teeth, and twitching of the extremities, and with a temperature of 40.2° C., the disease being in its third week, the author was able to produce a state of "euphory," which lasted for twenty-four hours, by means of three .6 grm. (9 grains) doses of antipyrin, each dose given within thirty minutes of the other.

The patient was a little girl, aged 5. These heroic doses were repeated when the violent symptoms of the malady had again been gradually increasing for about twelve hours. The author says that he would have used the remedy again as soon as the euphory had begun to subside, but was hindered from doing so by the parents of the child, who looked upon the remedy as a "highly dangerous drug," and would not permit of its

use until the violent symptoms had again manifested themselves; then they would implore him to administer it again. He would then be forced, "for precaution's sake," to sit by the bedside until full action had taken place, which usually was in about two hours. The child recovered in five weeks after the gradual use of 1.8 grm. (28 grains) of antipyrin.

The otorrhoea, however, continued for some ten weeks longer in spite of an energetic use of "Politzer," dry cleansing, and subsequent filling up of the passage with acid. boric. pulv. (although the decomposition of pus was in a measure checked by this treatment), and the little patient, who, during her whole illness, had not spoken a word, and had only seemed to hear slightly when under the full influence of antipyrin, remained deaf and dumb.

Dr. Friedlaender states that his experience with the drug in bronchitis acuta of children has been far richer. He confesses that before he definitely settled upon the use of antipyrin he had lost many children with this disease. The duration was usually two or three weeks. Since he has used antipyrin in bronchitis of children the disease seldom continues for over a week. The author says that he must call attention to the fact that antipyrin has only proved of such great value in cases which were marked by a high fever, whereas those cases where the temperature was only moderately high (below 39° C.) were but slightly affected by the drug. From which it would appear that antipyrin is far more potent in bronchitis, when the catarrh is hindered from loosening by a high temperature.

Another peculiar fact that the author notes is that antipyrin acts far better on well-kept children than on those of poor parentage who are poorly taken care of.

Perhaps it is because the children who are well cared for are better able to stand the weakening accompanying symptoms of antipyrin. Since Dr. Friedlaender has used antipyrin in such cases which are especially suited for its use,—viz., when the temperature is over 39° C. and the patient well nourished,—all the children (thirty in number) have recovered after only a week's illness. And also among weakly children where the temperature was below 39° C. a careful use of the drug gave very good results, and the author states that he has lost far fewer patients of this class than before using antipyrin.

During a recent murderous epidemic of

bronchitis, which raged last winter in the vicinity of the author's labors in Russia, the mortality was fifty per cent. in the cases observed by himself and his colleagues. By the use of antipyrin, however, the mortality of the little sufferers was reduced to 0 per cent. among the children who came under the first category, while the mortality of the children coming under the second category (the number of which the author cannot exactly give) was, at the very highest, estimated to be only ten per cent.

The author's method of using the remedy is as follows: As soon as apathy is noticed (the temperature being usually then over 39.5°C.) he at once gives .6 grm. (9 grains) to .9 grm. (14 grains) of antipyrin in one dose. Doses of .6 grm. (9 grains) will be sufficient for children under two years of age, and its effect will last for about twenty hours, while doses of .9 grm. (14 grains) in larger children (under five years of age) will only be sufficient for about twelve to fifteen hours; therefore it will be necessary to give the last-named dose twice in twenty-four hours in order to insure the desired effect. Most of the little patients perspire freely after taking the drug, then fall into a gentle and refreshing sleep, from which they awake in one or two hours perfectly bright and happy and contented. Others, again, will improve more slowly and gradually without either sleeping or perspiring. The cough loosens; breathing becomes easier and less rapid; there is an inclination to play. In addition also the author always orders wine, food which is rich in albumen, gentle aperients, and caffeine.

R Caffeine puri, .06 to .2 (i to $\text{iii}\frac{1}{2}$ gr.);
Sod. bicarb., 1.5 to 3 (xxiv to xlvi gr.);
Aqu. foenicul., 60 (Zii);
Syr. ipec., 30 (Zi).

M. S.—Every half-hour to every two hours one teaspoonful.

In three to five days the change for the better becomes very marked. Although there is a loss of appetite, the child's cough will be much easier, its general appearance brighter, and it will be active and playful.

Usually during convalescence the author continues to give half-doses of antipyrin once a day, .3 to .45 grm. (or $4\frac{1}{2}$ to 7 grains). The children who perspire freely after full doses of the drug usually recover more rapidly than others.

"I hope," says the author, in conclusion, "that my observations may throw further

light upon the interesting actions of this new antipyretic, and especially that they may lead to further inquiries and investigations concerning its beneficial actions in bronchitis acuta of children."

CASCARA SAGRADA IN CONSTIPATION.

DR. JOHN W. FARLOW read a paper on the uses of cascara sagrada in the treatment of constipation at a recent meeting of the Suffolk District Medical Society, in which he spoke in the highest terms of the use of this remedy (*Boston Medical and Surgical Journal*, October 27, 1887). According to his experience the cases for which cascara sagrada is particularly adapted are the chronic cases, and especially those with weak digestive organs. For such cases this is far superior to rhubarb, senna, aloes, liquorice powder, and the usual laxatives, either alone or in various combinations. For acute cases its peculiar properties are not so much required, although it generally acts promptly, surely, and without secondary constipating effect. The different preparations which may be employed are the cascara cordial and solid extract and the fluid extract. Dr. Farlow generally uses the fluid extract.

It is an active and reliable preparation; the dose is small, and can be easily regulated by increasing or diminishing the number of drops taken at a time. The taste is bitter, to which some object, while others find it not unpleasant. To the latter it can be given in water or with equal parts of glycerin in water. Most of the substances supposed to disguise the taste only add a sweet to a bitter, and the combination is to many worse than either alone. The fluid extract of liquorice is perhaps as good an excipient as any. Cascara cordial has an agreeable taste, and is preferred by many. The dose is of course larger, and is not so easily regulated as the fluid extract. The solid extract is given in pill form, and consequently can be taken without the bitter being tasted. If, however, the dose in each pill proves too large, a new lot with a smaller dose has to be procured, which is a disadvantage as compared with the fluid extract.

The dose of the cordial is about a teaspoonful morning and night, or oftener. The solid extract is given in doses of 2 grains or less three times a day. The dose of the fluid extract is from 5 to 25 drops, and may be taken as follows: if the case is of long standing, and one in which many drugs have been tried, 10 or 15 drops are to be

taken in water before each meal and at night. If that does not cause one soft dejection a day, in two or three days the dose should be 25 drops four times a day, and tell the patient to take sufficient to have one dejection a day. Then, in a few days at any rate, or immediately, if he has more than one stool a day, he is to diminish the dose from 30 to 25, 20, or 15 drops, but always enough for one soft stool a day. It is better to diminish the quantity taken at a time than to lessen the number of times. It will be found that 5 or 10 drops at night often prove sufficient. It is well to omit the medicine from time to time, and it can frequently be dispensed with altogether. If necessary to resume it, let only the amount be taken that was previously found to be sufficient.

Dr. Farlow's paper evoked considerable discussion. DR. MINOT stated that he had used this remedy to a considerable extent in the treatment of constipation, always with the most satisfactory results. He had found the dose to be variable: in some cases the amount required to produce the desired action being considerably greater than in other cases, without any appreciable difference in the patients. Ordinarily he had prescribed 10 drops, which might soon be reduced after a few doses to 5 drops, and then discontinued entirely.

DR. C. P. PUTNAM only had used cascara to a slight extent: his results were variable and uncertain, a result probably to be explained by the small number of cases in which he had used it.

In reply to the question as to whether the degree of constipation which exists is in any way a guide to the dose of cascara which should be given, Dr. Farlow replied that he knew no guide to the exact amount which would be required in any case, but each patient must try the drug in a dose of moderate character, and increase or diminish the amount as the case requires. Dr. Landowski, who introduced it into France, and who experimented largely with it in the clinic of Dujardin-Beaumetz, as did also Dr. Eymeri, draws the following conclusions as to its use: The medicine purges easily, generally without colic, at a relatively small dose; its use not only does not excite anorexia, but, on the contrary, it excites the appetite, which is especially worthy of remark; at the end of ten or fifteen days of its employment, one can often stop the medicine without the constipation beginning again. If at the end of a certain time the constipation sets in again,

one has only to take the medicine again for three or four days. He thinks it particularly good in cases of intestinal atony, and, when it succeeds, he does not know of any better means of combating obstinate constipation.

CLINICAL NOTES ON SULPHATE OF SPARTEINE.

DR. J. PRIOR, docent in Bonn, prompted by the experiences of Germain Sée, has for some time past been using sulphate of sparteine as a heart-remedy in general, but found it especially useful in affections of the cardiac muscles, be it either change of tissue or weakness; further, also in valvular troubles when the compensation was affected, and particularly when the pulse was irregular, jerky, or arrhythmic. The author sums up the results of his observations with the drug in the following notes:

1. Sparteine increases the secretion of urine. This, in healthy patients and under certain circumstances, may take place without the circulation being materially affected.

2. Whether, according to the views of H. Leo, sparteine owes its diuretic property to its effect on the epithelium of the kidneys or not has not yet been proved. It is, however, very possible that the effect the drug has on the heart's action increases the quantity of urine, as the author's experiments have proved to him beyond all doubt that sparteine sulphate materially affects the pressure of the blood.

3. It must also be mentioned that, although sparteine had a beneficial effect on almost every heart-trouble, yet in several cases it had no apparent effect whatever. It acted best when used in cases of irregular compensation which resulted from valvular affections.

4. The drug usually commences to act in about two or three hours after it has been administered, and the effects last for a few hours, but in some cases even for as long as three days.

5. If the remedy has overcome the irregularity of compensation it will keep the heart's action regular for some time, as is shown in notes 12 and 13.

6. In patients where the secretion of urine has been suppressed by the affection of the heart's action, the drug will perform the double duty of regulating the heart's action and at the same time increasing the secretion of urine; the oedema and the serous transudations will also disappear.

7. The pulse frequency will be lessened,

which is explained by the heart's action having been regulated, and the pressure of blood increases.

8. It will be well to mention that also in those cases where sparteine has no apparent effect on the heart's action and has failed to regulate it, yet the pressure and difficulty in breathing was always relieved.

9. No beneficial effects were observed from the drug when used in cases of bronchial asthma.

10. On one occasion only were evil after-effects observed to follow its use, and that was after a dose of 2 grammes (31 grains). The pulse once became irregular. This was the only case where any disagreeable effects were noticed. Above all, the drug seems to have no injurious or irritating effect on the stomach or bowels.

11. Concerning the size of the dose which is necessary to insure the action of sparteine, it was found that doses of .02 (about $\frac{1}{3}$ grain) *per dosi* and .1 ($1\frac{1}{2}$ grains) *per die*, which, by Voigt, are called "medium doses," were too small. A far better action was observed when from the very outset doses of 1 decigramme ($1\frac{1}{2}$ grains) were given, and in some peculiar cases even as much as 2 decigrammes ($3\frac{1}{4}$ grains) at a dose, and in a few special cases this dose was repeated several times during the day. In this respect the author agrees with Germain Sée, and also with H. Leo, who both advise .1 doses ($1\frac{1}{2}$ grains) several times a day, and who ordered 2 or more grammes of sparteine sulphate to be taken in two or three days.

Larger doses than this should, however, be used with the greatest possible caution, as it has been observed that when over a certain amount has been given the action of the drug was reversed, and caused a still greater irregularity of the heart's action than that which had existed before the drug was used. From this fact it was, however, seen that,—

12. This artificial irregularity ceases in eight to twelve hours, and the former state again supervenes, and now smaller doses of the drug may be given with the same effect as though the drug had never been used before. From this it may be justly inferred that,—

13. No accumulative effects of sparteine sulphate need be feared.

The author considers the use of the drug indicated in all cases of heart-trouble in which digitalis, which is still the reigning cardiac remedy, has been tried without avail, or when from some reason or other its use is

abstained from, or when it is desired to regulate the heart's action in the soonest possible time.

Furthermore, the use of sparteine is of great value in stenocardiac attacks; it will give relief and good results even when the heart's action is seemingly unaffected by it.

Its diuretic action is also of great value. The author is still in doubt as to its accredited action in bronchial asthma, but, at any rate, it cannot be compared with other remedies which are used in that disease.—*Zeitschrift für Therapie*, Vienna, October 15, 1887.

THE VALUE OF CALOMEL IN CERTAIN DISEASES OF CHILDREN.

The careless and indiscriminate use of calomel properly leads to its condemnation as a remedy, but now that the cases in which its employment is indicated are being recognized with a greater clearness, we can recognize the great value of this remedy in diseases of children, especially if properly selected. DR. GEORGE B. FOWLER, in the *New York Medical Record* for November 19, 1887, refers to several affections common to children in which the greatest advantage may be expected from its employment.

Diarrhœas.—Diarrhœas in children are of varied severity, and may depend, in otherwise healthy individuals, upon several different causes,—over-feeding, improper feeding, dentition, and other nervous influences, atmospheric disturbances, and changes of temperature. Whatever the cause, the first thing to happen is an arrest of, or interference with, digestion. The food then begins to act as a mechanical irritant, or, ptomaines and poisonous gases being produced, as a chemical one, and diarrhœa ensues. Here calomel, given in $\frac{1}{4}$ -grain doses, and combined with the bicarbonate of sodium and a little sugar, repeated every half-hour, until one-half or one grain, according to the age of the child, has been administered, will, in most cases, relieve the symptoms. Of course the diet must be carefully regulated, and it may be necessary, after the bowels have moved several times as an effect of the medicine, to administer small doses of Dover's powder at intervals of two or three hours,— $\frac{1}{4}$ to $\frac{1}{2}$ grain.

Dr. Fowler believes that the remedy in this affection acts both as a cathartic and antiseptic. It relieves congested mucous membrane, and, if there be vomiting, is almost unequalled in relieving that symptom. In entero-colitis

he proposes the same plan of treatment as in simple diarrhoea, and in cholera infantum, combined with stimulants and hot or cold water enemas, as the case requires, he has succeeded in obtaining excellent results.

In all the common *derangements of digestion* where slight diarrhoea may or may not alternate with constipation, and hard balls of pale faeces are voided, Dr. Fowler gives calomel in minute doses twice a week until the bowels are uniformly loose. Then he gradually reduces the frequency of the dose, and, finally, after about three weeks, stops it altogether. For peevishness, fretfulness, anorexia, accompanied or not with slight fever, calomel is the remedy.

For *intestinal worms* the author uses nothing but this agent. In fact, whenever he desires a cathartic effect he rarely employs any other medicine than this salt of mercury.

It has long been known that calomel caused an increase of the discharge of urine, and within a year or two several papers have appeared reviving the treatment and attempting to explain its action in this connection. The writer has employed it in two cases of *pleurisy* with the best results. The urine in both instances was markedly increased, and this, together with the slight catharsis, was effective in rapidly causing absorption of the fluid. It is certainly indicated in other dropsical conditions. It is safer and more active than digitalis and acetate of potassium, to say nothing of its preference as regards taste and ease of administration. In *pneumonias* of children, where there is danger from oedema of the lung, or suffocation from accumulated mucus, calomel demonstrates its diuretic and absorbent powers by relieving these conditions and averting the danger.

Dr. Fowler is likewise a strong advocate of the use of this salt in diphtheria, and believes that it is the best remedy there is to combat this dread affection with advantage. His experience with it in this disease has been so extraordinary, so incredible, having only lost two cases out of thirty, that we can scarcely endorse his eulogy of the drug in this disease. He claims for calomel that it is the best and most agreeable cathartic for children, and that it is an antiseptic and an effective diuretic; that all will admit.

THE OIL OF TURPENTINE IN DIPHTHERIA.

The value of this drug in diphtheria and similar diseases is beginning to be universally

acknowledged, and the following results of the experiences of DR. C. ROESSE, of Hamburg, only serve to give further proof of its efficacy in this serious disease (*Therapeutische Monatshefte* for October, 1887):

During the past four years the author has treated sixty cases of diphtheria with the oil of turpentine, among which two patients were 1 year old, five were 2 years old, five were from 3 to 5 years old, ten were 6 years old, six were 7 to 9 years old, fifteen were 10 to 15 years old, ten were 16 to 20 years old, six were 20 to 30 years old, and only one patient was older than this.

Out of the sixty cases thus treated only five died. Two of these were the children aged 1 year, who were moribund when the author was called in, and died in the course of a few hours. Two of the other deaths were a little girl aged 2 and a lad aged 15. Both died after an illness of only thirty-six hours, which from the very outset had been of a most violent character. Both patients were well nourished and well cared for. The other death was that of a poorly-nourished boy, aged 15, who was also weak and poor-blooded; in him the disease lasted for five days.

Not counting the two first-named cases, there practically remains only three deaths in fifty-eight cases, which is about a death-rate of five per cent.

The oil of turpentine was given by the teaspoonful three times a day. As a corrective, Dr. Roesse used spiritus ætherus, 1 gramme (16 minims) of the spirits to every 15 grammes (4 drachms) of turpentine oil.

At the same time he gave a tablespoonful of a two per cent. solution of sodium salicylic. every two hours; also used ice-bags, and had the patient gargle frequently with a one per cent. solution of potassium chlor.

The following are the results of his observations:

1. The fever and the frequency of the pulse decreased rapidly.
2. The subjective difficulties, such as headache and difficulty in swallowing, were soon relieved.
3. The duration of the disease was greatly shortened.
4. The local symptoms ceased to grow worse in most cases as soon as the first dose of the drug had taken effect.
5. The danger of choking only occurred in one case,—viz., that of a boy 3 years old. Tracheotomy was performed, but this is the only case in which the operation was necessary.

The author abstained from painting the throat, as he contends that his experience has shown him that the practice is utterly valueless. Aside from this, the author remarks that he considers the private practice of patients painting their own throats as very unsafe, and should be carefully guarded against.

The oil of turpentine was used with the greatest possible caution in anæmic and decrepit cases, and patients with cardiac troubles.

In sound-hearted patients the increase of the heart's action was carefully watched. The author's patients were given strong bouillon or beef-tea, old port wine, and milk. The thirst was quenched with ice-water, with or without raspberry syrup.

The diet consisted only of the above-named fluids, no solid food of any kind being given.

Dr. Roesse stopped the use of turpentine oil so soon as the patient was free from fever and the local symptoms had improved. Usually 15 to 20 grammes (4 to 5 drachms) were sufficient, but in a few cases as much as 60 grammes (2 ounces) were given during the course of the disease.

The author states that he has never observed any signs of poisoning resulting from the use of turpentine oil.

Slight partial paralysis was once observed after the disease had left, but was speedily corrected by small doses of iodide.

A NEW METHOD OF EMPLOYING IODINE FOR ANTISEPTIC PURPOSES.

Antiseptic medicine—not merely preventive, but employing antiseptics as therapeutic agents in the treatment of disease, more especially of a zymotic type—is more and more becoming worthy of the attention of physicians. It will be frequently noticed that the remedies employed in the treatment of infectious diseases for the protection of those in attendance and for the prevention of the spread of infection often produce satisfactory changes in the conditions of the patients themselves. Thus, fumigation of the sick-room of a scarlet fever patient will often be attended with a marked diminution of the throat-symptoms, and with a perceptible decrease of pyrexia, restlessness, exhaustion. It appears to be tolerably well established that the most favorable period for the propagation and development of con-

tagion is in the night-time; perhaps mainly because the sunlight is temporarily withdrawn, and, the house being closed against the free transmission of air, impurities from exhalations, excretions, and various other sources accumulate. Accepting this statement as correct, it occurred to MESSRS. J. H. CASS and GEORGE BROWNEN (*Med. Press*, October 5, 1887) that if the materials employed for illuminating purposes in the night could be utilized for the evolution of a disinfectant, a useful preventive of contagion would be obtained. Koch came to the conclusion that the only effective disinfectants besides chlorine, bromine, and iodine are corrosive sublimate, osmic acid, and potassic permanganate.

We must necessarily exclude the mercurial sublimate from our consideration. Valuable, perhaps the most valuable, as it is among antiseptics for local surgical application, its highly poisonous character forbids its employment as a general medicinal disinfectant. Osmic acid and bromine are too expensive for general use, and the offensive odor of the latter would also militate against its employment. Chlorine has the same objections from the disagreeable pungency of its vapor. The potassic permanganate is also comparatively valueless unless employed in considerable strength. Iodine, however, presents none of these disadvantages. It has long been recognized by all authorities as a true germicide disinfectant. Iodoform, which acts by the gradual and continued liberation of free iodine, is now almost universally employed in the surgical application of antiseptics. The deodorizing properties of iodine have been long known, and although it has for very many years been employed for that purpose in the cancer-wards of the Middlesex Hospital, and probably in many other similar institutions, its employment as a general disinfectant has been greatly lessened, owing to the difficulties experienced in its regular and gradual vaporization. Combined, however, with salicylic acid, we find that it can be readily and permanently incorporated with fats, paraffins, or wax, and when candles made from these hydrocarbons thus treated are ignited iodine and phenol are evolved in a gaseous vaporized form. The phenol is produced by the decomposition of the salicylic acid, and its amount varies according to the temperature or rate of the combustion. Its presence may be verified by passing the vapors of the combustion through dilute nitric acid, and thus producing trinitrophenol or picric acid. But where the combustion is

rapid and complete the phenol is entirely destroyed, as all other *organic* materials, such as eucalyptus, which has been suggested for somewhat similar treatment, must necessarily be. It is not so, however, with regard to the iodine. Being *inorganic*, it is wholly volatilized and thrown out as vapor into the surrounding atmosphere, but it is in no sense destroyed. Its presence in the gaseous products of the combustion may be demonstrated by passing them through a solution of starch, or along a tube moistened with starch-mucilage. In either case the iodide of starch is speedily produced, and may be recognized by the usual tests. A very faint odor of iodine may be detected when these candles have been burnt in quantity in a close atmosphere; but this is never unpleasant, or in the least degree irritable to breathe; indeed, in several cases of asthma, spasmodic cough, and "hay-catarrh," the patients have experienced great relief from the iodine-vapor thus liberated. As a deodorizer its action is most marked; the smell of tobacco-smoke is quickly and entirely destroyed by the combustion of these candles in the smoking-room. The air of stuffy rooms and smelling closets may be rapidly purified by the same means. The odors of sulphuretted hydrogen and of ammoniacal air from a close stable have been very speedily and completely discharged by contact with the same vapor.

NOTES ON ANTIFEBRIN.

The following interesting notes on antifebrin by PROF. A. BOKAI are the results of the labors of the institute for experimental pathology of Klausenburg. They were published in the *Deutsche Medicinische Wochenschrift* for October 20, 1887, and will be of special interest to pharmacologists, as they treat mostly of the pharmacodynamics of antifebrin.

1. Antifebrin kills infusoriæ. A .5 per cent. watery solution of the drug will in a few minutes stop the movements of balantides and opalines, also of flagellates; and in fifteen minutes to a half-hour all these micro-organisms will have completely lost their motive-power. The infusoriæ of a simple infusion of hay are killed with even greater rapidity; the flagellates are here also the last to die. Antipyrin does not act any more powerfully on infusoriæ than antifebrin; the salts of thallin are more active, but the most energetic of all of these new antipyretics in this respect is kairin.

2. The moving bacteriæ (spirilli and bacilli) of an infusion of hay retain life and continue to move in a .5 per cent. solution of antifebrin as long as three hours. The antizymotic action of the drug which is claimed by Krieger, Cahn, and Hepp cannot possibly be very energetic.

3. A .5 per cent. (indeed, even a .25 per cent.) solution of antifebrin will stop the protoplasmic movements of the amœbæ in an infusion of hay in four or five minutes.

4. The amœbic movements of the colorless blood-corpuscles of rabbits cease in four to six minutes when placed in .5 per cent. solution of antifebrin containing .6 per cent. of common salt; the same result may be obtained by a .25 per cent. solution.

5. The red blood-corpuscles of man, rabbit, dog, and frog dissolve in a .5 per cent. solution of antifebrin containing .6 per cent. of salt.

When examining the solution in which the red blood-corpuscles had been dissolved (by means of the microspectroscope) it was observed that the characteristic absorption stripes or lines of methæmaglobin in the red portion of the spectrum were absent.

6. A similar salty .5 per cent. solution of antifebrin will paralyze the motoric nerve-ends of the muscles of a frog in the same manner as curare. After continued influence the striped muscular fibres lose their power of contraction entirely. The nerve-centres are not excited or affected by the above solution.

A fatal dose of antifebrin will render a rabbit helpless in five minutes; in ten to fifteen minutes convulsive twitchings begin, and the respiration becomes more and more slow and labored. If an electric current be applied directly to the muscles even an hour and a half or two hours after the drug has been administered, they will contract actively; if, however, the current is brought in contact with the motor nerves, only slight contraction will take place. At the moment of death the muscles will still contract strongly when the electric current is applied directly to them; the motor nerves, however, show no reaction.

7. Toxic, but not fatal, doses of antifebrin irritate the vaso-constrictor centre of the spinal cord and paralyze it.

8. The cyanosis, which is very great when fatal doses of antifebrin have been given, results principally from the effects of the poison on the respiratory organs; which may be explained, firstly, by a paralysis of the motor nerve-ends of the respiratory muscles; and, secondly, by a probable paralysis of

the respiratory centre in the medulla oblongata. The cause of the cyanosis in animals should never be sought in the formation of methæmaglobin, as even when the largest doses of the drug were given neither before nor after death was methæmaglobin traced in the blood. It may be added that methæmaglobin was, however, found in the blood of a dog when under the influence of doses of antifebrin which were not fatal. It is very possible that in these animals (canines) the cyanosis is accompanied by the formation of methæmaglobin, yet only accompanied and not caused by it, as also in dogs the respiratory functions are always impaired by antifebrin, even when given in only slightly toxic doses. The author is of the opinion that the cyanosis observed in man is caused by vascular spasm.

9. Antifebrin does not seem to have any effect on the brain, although it appears to affect the sensitive elements of the spinal cord. Professor Bokai asserts the above, as he has observed that in rabbits poisoned with the drug when they are still able to voluntarily move their extremities, reflex movements were impossible. The animal did not move when its tail (otherwise so sensitive) was pinched, and did not squeak when the ischiatic nerve was severed.

10. The power antifebrin has of reducing the heat of the body when given in non-toxic doses is due to its property of lessening the production of heat.

In toxic doses this is increased by the vascular paralysis; in man it is accompanied by perspiration. The author's assertion that antipyrin lessens the production of heat is sustained by the fact that the motor nerve-ends of the muscles, and also the muscles themselves, are paralyzed by the drug. Professor Bokai does not consider that total paralysis of the motor nerve-ends is necessary for the lessening of the production of heat, but holds that their partial paralysis or paresis is sufficient to hinder its production.

Such a paresis must, therefore, take place in man, when, upon taking large doses of the drug, the temperature falls with such marked rapidity.

The presence of paresis is noticeable in the weakness, adynamia, and tired feeling about which most patients who are taking antifebrin constantly complain.

In those cases of antifebrin-poisoning where, in the blood of a man or dog, methæmaglobin is found, there can be no doubt that this also will lessen the production of heat to a marked

extent. Further, the power antifebrin has of dissolving the red blood-corpuscles, if (as is not unlikely) this could take place in living blood, would undoubtedly also tend to lessen the production of heat.

Still another point should be mentioned which has led the author to the conclusion that antifebrin has the above property.

Toxic, but not fatal, doses of antifebrin, when given to a rabbit, cause a spasm or contraction of the cutaneous vessels (medicinal doses have a similar effect on a man); this lessens the giving out of heat through the skin; still, in spite of this, in a short time (both in rabbits and man) the central (rectal) temperature will be reduced. We must now also take into consideration the fact that antifebrin has little or no effect on the heart, and so in this case the fall of temperature is clearly due to the lessening of the production of heat.

That this is really the case will be made apparent by the following brief account of two of the author's experiments:

A dog was put under the influence of tincture of opium (per venam) and then tied down by his four legs in a room the temperature of which was 20° to 23° C. Professor Bokai then placed a thermometer under the skin of the lower part of one of the hind legs, and placed another between the muscles of the other hind leg, and still another in the rectum. After the normal temperature as indicated by each thermometer had been carefully determined, the author introduced into the stomach of the dog a large, although not fatal, dose of antifebrin, and for the next four hours proceeded to carefully record every change of temperature of each thermometer. The table which he had thus procured he carefully compared with another table of the temperature of a canine which had been similarly prepared, but which had not been given antifebrin. The comparison showed that in the animal which had not been treated with antifebrin the temperature under the skin sank 4.2° C. in four hours, the temperature between the muscles sank 2.3° C., and in the rectum 2.1° C., while in the dog that had been given antifebrin the temperature under the skin sank 4.4° C., in the muscles it sank 4.5° C., and in the rectum 4.6° C. It will be observed that in both animals the fall of the temperature under the skin was nearly uniform; the temperature of the muscles, however, sank 2.2° C. lower in the animal treated with the drug, and the temperature of the rectum of the same animal

2.5° C. lower in a like period than in the dog that had not been given the drug.

Should the temperature of the skin after a time have indicated a rise, then the great reduction of internal temperature could be easily explained by the giving out of heat through the skin. As this was not the case, and especially as we observed such a rapid fall of temperature, the cause can only be explained by the lessening of the production of heat in the muscles.

Finally, the author concludes by stating that a student in his institute, Mr. Emanuel Deutsch (*Cand. Med.*), has been making a series of experiments relative to the effect of antifebrin on the nitrogen contained in the urine, and has found, as might have been expected, that antifebrin has the power of greatly decreasing the quantity of nitrogen in the urine. Mr. E. Deutsch is working according to the "Kjeldahl" method, and his observations will be shortly published.

ARSENICAL PIGMENTATION IN PEMPHIGUS.

At a recent meeting of the Clinical Society of London, DR. HANFORD reported a case of pemphigus occurring in a child aged 13, and terminating in complete recovery after nearly a year (*Medical Press*, October 19, 1887). The limbs, trunk (except parts of chest and abdomen), face, tongue, mouth, pharynx, mucous membrane of nose, conjunctivæ, and orifice of the vagina were all affected. The eruption came out in crops, and was accompanied by rise of temperature. Micro-organisms were found in the bullæ which contained pus, but not in those which contained serum. Quinine in large doses was given with benefit, and arsenic. Of the latter, 15-minim doses of Fowler's solution were given thrice daily, and continued for ten weeks. After this, the skin of the whole body was noticed to be dry, brawny, and darkened in color. The axilla, groins, and abdomen were almost as dark as in Addison's disease. The skin looked dirty, but the color was proved to be due to pigment, deposited chiefly in the rete, but partly in the more superficial epithelium. The arsenic was stopped, and the patient treated by wet-packing, and in a month the skin had resumed its normal, smooth, moist appearance, and much of the pigmentation had disappeared. Also on the hands and feet there were many elongated patches of cicatricial-looking skin, thickened and elevated. These

patches were covered with white points, like millet-seeds, just beneath the epithelium, and resembling, to the naked eye, miliary tubercles. They were not tubercular, but consisted of accumulations of degenerating epithelial cells in the deeper part of the epidermis. They disappeared in four or five months. It is possible that this condition also was due to the arsenic. Several colored drawings and photographs illustrating these conditions were exhibited. A third case of pemphigus was described, in which there was some ground for suspecting implication of the mucous membrane of the intestinal canal. It presented also the atrophied glossy condition of the skin of the hands mentioned in the first case, and which is so suggestive of an implication of the peripheral nerves. No definite affection of sensation or of the reflexes, however, could be discovered, though reference was made to the statement of Dr. Pasquale Ferraro that he had found advanced changes of an atrophic degenerative nature in the posterior horns of the dorsal spinal cord, and also in the peripheral nerves, the ganglia on the posterior nerve-roots, and in the sympathetic ganglia. Two further instances of arsenical pigmentation were narrated, and the opinion was expressed that small doses of arsenic— $\pi\lambda v$, or $\pi\lambda x$ —of the liq. arsenicalis repeated thrice daily for about two months were capable of producing a pigmentation of the skin, chiefly of the abdomen, lower part of chest, lumbar region of the back, axilla, groins, and inner part of the thighs. This condition was not necessarily accompanied by roughness and dryness of the skin, and disappeared slowly in from one to four months, or rather longer.

DR. CROCKER, referring to the pigmentation of the skin, said that this was fairly common on the site of eruption, as a result of the treatment of psoriasis by arsenic. General pigmentation, however, was less common, but did, nevertheless, occur from time to time. He had then under his care a boy with a bullous erythema, which he was treating by arsenic. Latterly the boy's skin had become pigmented. He thought it should be generally known that pigmentation was likely to follow prolonged treatment with arsenic, quite independently of the eruption. It was probably due to a deposit of the metal itself in the skin. The pigmentation lasted a very considerable time, much longer than four months, as mentioned by the reader of the paper.

DR. GOODHART took up the question of

fever mentioned by the reader of the paper, he having a case now under his notice, in a little girl, in which high fever occasionally occurred. He said that this case showed very plainly the peculiar property of arsenic to control the disease, though not to cure it. In this case the dose of arsenic required to subdue the eruption was so high that it could not be continued, and then the eruption recurred.

SIR DYCE DUCKWORTH wished to add his testimony as to the value of arsenic in the treatment of pemphigus. He had formerly been sceptical as to the benefits claimed for its use, but had more recently had ample proof of its efficacy, several cases having been apparently quite cured thereby. In one of these cases marked pigmentation had followed the use of 12 minims of arsenical solution three times a day.

THE ACTION OF CHLORIDE OF ETHYLENE ON THE CORNEA.

In the *France Médicale* of July 5, 1887 (*London Med. Record*, October 15, 1887), MM. R. DUBOIS and L. ROUX publish the results of their researches on the action of chloride of ethylene on the cornea, which was the subject of a communication to the Academy of Science.

The interest of these researches lies principally in the very experimental opacification of both corneas, under influence of an agent administered through the respiratory organs. The animals experimented upon were dogs, that were made to inhale the vapors of chloride of ethylene for one hour and a half. The eyes presented nothing particular, except a considerable diminution of intraocular pressure and an irregular astigmatism already noticed by M. Dubois in prolonged action from chloroform-anæsthesia. With anæsthesia by chloride of ethylene these modifications are much more apparent.

The cornea remains transparent as long as the inhalation continues, and afterwards as long as the animal throws off by the lungs the anæsthetic. But after from sixteen to eighteen hours, sometimes less, the two corneas lose their transparency, take a bluish opalescent tint, and give a peculiar expression to the animal. On the two dogs in question this strange effect took place during the night, and was first observed in the morning on their awakening. No other disturbances were observable. The inhalator had been so arranged

that the anæsthetic vapors could have no direct contact with the eye.

One of the animals was killed, the other kept under observation for a fortnight. Both presented the same symptoms. In the living dog the tension of the eyeball was still considerable, although less than the first days. The maximum of intraocular tension was attained at the moment of the production of the corneal opacity.

The curvature of the cornea was evidently exaggerated, principally along the vertical meridian, causing a regular astigmatism, easily appreciable with the disk of Placido. At the moment the opacity of the cornea was first noticed there was no trace of irregular astigmatism; the surface of the cornea had preserved its polish, but examined through a magnifying-glass, very numerous minute depressions were observable all over it. The general aspect is that of total anterior staphyloma, opaque and symmetrical in both eyes. Vision subsists, but is rather dimmed by the opalescence of the cornea. The ophthalmoscope shows that the crystalline lens is still transparent, but the details of the back of the eye are not distinguishable. The oculo-pupillar reflex is retained, and also the oculo-palpebral reflex. The sensitiveness of the cornea and of the retina did not appear to have been affected. For the last two days there is amelioration in the state of the cornea. At the outset the opacity was uniform, but at present, under the ophthalmoscope, with a strong light, numerous whitish arborisations are discernible, the direction of which radiates from the periphery towards the centre.

The experiments of M. Ranvier at the Collège de France on the cornea of animals used for experimentation having shown that the cornea may lose its transparency when subjected to pressure, it is not impossible that the variations of intraocular pressure noticed may be the cause of the opacity produced in the living animal. The question arises whether in this case it is not a dishydration of the cornea, more particularly of certain constituent elements of that membrane, the more so that M. R. Dubois has already proved the powerful dishydrating action of anæsthetic vapors on animal and vegetable tissues. What seems to confirm this view is the remarkable loss of weight of the animals experimented upon, unexplainable by an increase of the phenomena of assimilation or by refusal of food. These observations are most interesting, and augment the list of those so little understood accidents which so

suddenly supervene at the moment when the economy is getting rid of poison, and which differ so entirely from those produced by the penetration of the poison into the system.

USTILAGO MAYDIS AS AN OXYTOCIC.

During the months of May to August, 1887, DR. W. A. N. DORLAND, while serving as a resident obstetrician in the Philadelphia Hospital, tested the efficiency of ustilago in those cases in which the parturient pains had almost or entirely died away during the second stage of labor, and he reports nine cases in the *Medical News* for November 5, 1887, grouping his conclusions from them as follows:

1. *The toxicology and physiological action of the drug.*

No cases of poisoning in man by the drug are on record. That it is, however, possessed of toxic properties in large doses has been proved by Mitchell. (See THERAPEUTIC GAZETTE, 1886, p. 223.) He found that in the lower animals, in large doses, it acted violently upon the spinal cord, paralyzing first the sensory, later the motor, tracts, finally involving the motor and probably also the sensory nerves. Like ergot, then, it is probable that the chief force of the drug, in toxic doses, is expended on the nerve-centres, producing a toxic paralysis.

After the administration of the drug in three instances, there was considerable nausea, followed by vomiting of the ustilago, together with the other contents of the stomach. This nausea seems to be of a similar character to that produced by the ergot of rye, and calls for no further discussion.

The action of ustilago upon the uterus has been more carefully noted. After the ingestion of a sufficient amount, in from twenty minutes to half an hour, the pains, if present, are increased in severity, in frequency, and in duration, presenting a marked clonic character, following each other in frequent succession, with a decided intermission between each. In this respect it differs decidedly from the action of ergot, which, in full doses, produces one continuous, tonic spasm of the uterine muscle. It is this property of ergot which has, when administered before the delivery of the placenta, produced in so many instances the irregular contractions of the uterus, of which the hour-glass is a well-known example. The employment of ustilago

seems to be entirely free from such unpleasant complications.

In addition to being a valuable adjuvant in stimulating weak uterine contractions, ustilago seems to possess the property which some years ago was ascribed to quinine,—namely, of exciting uterine pains when entirely suspended. This has been noticed by Leonard and others.

As to the time required for the action of the drug to become apparent, it may be said that it differs in different cases, depending, undoubtedly, upon the rapidity with which it is absorbed from the gastro-intestinal tract and carried into the system. In the above record, in only two instances did it require over thirty-five minutes before the ustilago acted upon the uterine tissues, and in the latter case it will be remembered that most of the drug was ejected by emesis. In the remaining seven cases the average time required was twenty-five minutes.

The effect produced by ustilago upon the other unstriped muscular tissues of the body has not been inquired into. Probably it produces the same increase of intestinal peristalsis and the same rise in the arterial pressure, due to vaso-motor spasm, as is produced by ergot. This is yet open to investigation.

2. *The indications for the employment of the drug.*

It may be noticed that in all the above cases the ustilago was not administered until complete dilatation of the os had been accomplished. Whether or not a disastrous effect would be produced by the administration of the drug prior to the commencement of the second stage of labor cannot be stated. As yet, that question has not been decided. From the study of the physiological action of ustilago, it would appear that all danger of the irregular contractions of its compeer, the ergot of rye, would be precluded, and that if there were any possibilities of the exigencies of the case demanding its use, it might be employed with impunity during the first stage of labor. At present, however, it seems that the first indication for its use is the failure of the pains, with *complete dilatation of the os uteri*.

In none of the cases was the drug employed until the pains of labor had either become so weak that they were inefficient to accomplish the expulsion of the fœtus, or until they were entirely suspended. This, then, the author considers the second indication for its use,—namely, the *inefficiency or entire suspension of the parturient pains*.

After the ustilago had been taken, it may also be noticed that in no case was there the slightest tendency towards a post-partum hemorrhage. In each case, after the expulsion of the placenta, the uterus remained in a state of firm contraction. While during the three months the great majority of the remaining cases, in which the customary ergot had been employed, showed no tendency whatever towards this alarming accident, however, in two instances was there such an occurrence demanding prompt attention. The third indication, then, for the employment of ustilago is claimed to be *a condition of uterine inertia threatening or producing post-partum hemorrhage.*

3. *The dose and mode of administration.*

The preparation of ustilago employed in all reported cases was a good fluid extract. The dose of this varies from $\frac{1}{2}$ to 2 drachms, 1 drachm being a fair average. This may be repeated at intervals, as required. Should it be necessary, it may be used hypodermically, in doses of from 5 to 15 minims.

Finally. *The advantages of ustilago over ergot.*

Dr. Frank H. Potter, in a paper on the "Proper Use of Ergot in Obstetrical Practice," closes his article with a series of ten conclusions. In these he states that when administered during labor the action of ergot is uncertain, producing irregular contractions, rigidity of the os, with interference of the placental circulation, or too rapid expulsion of the fœtus, jeopardizing the maternal tissues. He also asserts that the life of the child is endangered through absorption of the oil of ergot, and that indirectly the drug may prove a cause of puerperal septicæmia by preventing the removal of every portion of the placenta and membranes. His last conclusion is as follows: "The proper use of ergot in obstetrical practice is limited to those cases in which, after the expulsion of the placenta, the uterus refuses to contract, or, having once contracted, shows a tendency to secondary relaxation. Even in these cases reliance should not be placed upon it alone, but its action should be supplemented by the other means used to provoke uterine contraction."

When compared to this formidable array of objections, the employment of ustilago seems much to be preferred to that of ergot. It does not produce irregular contractions, with all the consequent complications and sequelæ; containing but two and a half per cent. of fixed oil, while ergot contains from

twenty-five per cent. to twenty-eight per cent., the dangers of absorption are reduced to a minimum; and, finally, as it can be procured at a cost of fifty per cent. less than that of ergot, it seems to be on a fair highway towards the supplanting of the latter in obstetrical practice, should the results of the investigations thus far be confirmed by subsequent researches.

THE SURGICAL TREATMENT OF PERITONITIS.

The propriety and value of surgical intervention in the treatment of certain forms of peritonitis formed the main subject discussed at a late meeting of the London Clinical Society. The cases which gave rise to the debate belonged to two different categories, and perhaps for that reason the discussion was rather involved. It may therefore be convenient to analyze it on each head. In his successful case of acute suppurative peritonitis, MR. BARWELL was pursuing the practice which was brought before the notice of the Royal Medical and Chirurgical Society by Mr. Treves and Mr. Marsh two years ago, giving rise to an interesting debate on the occasion. For although, as Mr. Barwell said, the priority in conception of this procedure rests with the late Mr. Hancock, the operation itself, with the deliberate intent of treating the peritoneal condition, was first performed by Mr. Treves. It may now be considered not only a legitimate but a very valuable means of treatment, and one which is sure to become more widely practised. Mr. Barwell's case was also instructive, as the President pointed out, on account of the large accumulation of gas present within the abdominal cavity; which makes it more than likely that the peritonitis had been excited by a perforation of the bowel, perhaps of the vermiform appendix. General peritonitis due to perforation is almost invariably fatal, so that physicians may be justified in having early recourse to the aid of the surgeon, who by incision and drainage can promise a more favorable issue. As to the *technique* of the operation, nothing can be simpler, and it was clearly shown that no better medium for washing out the cavity could be employed than pure water, provided this were supplied in sufficient amount, and the irrigation were as thorough as possible. At the Clinical Society more attention was bestowed upon the subject of tubercular peritonitis, the two cases furnished by DR. KNAGGS and MR. CLARKE, of Huddersfield, forming

the chief topic of the debate. Here we may remark how deep-rooted is the notion that tubercular disease of a serous membrane like the peritoneum is necessarily fatal, and the impression conveyed by Dr. Burney Yeo's questions was certainly to that effect. We may refer all those who still hold to this opinion to a clinical lecture on "Tubercular Peritonitis in Children," by Dr. Gee, published six years ago (*The Lancet*, January 1, 1881), and his statement that "recovery from tubercular peritonitis is common" will be endorsed by physicians who practise in children's diseases. In adults cases of recovery from this disease are less common, but Sir Spencer Wells's celebrated case is a standing refutation of the prevalent pessimistic views which would regard tubercular peritonitis as being as hopeless as cancerous. The debate, however, did good service not only in correcting this impression, but in showing how materially recovery is aided by draining the cavity of its contained fluid. Here, again, a lesson may be learned from the practice often adopted in the case of children with considerable success,—viz., simple paracentesis. Whether irrigation and continuous drainage is superior to paracentesis, which may have to be repeated, experience alone will show; but that the essential thing is to withdraw the fluid so as to allow the affected serous surfaces to come into contact was strikingly brought out in the report which Mr. Treves gave of the recently recorded experience of German surgeons. The measure of success obtained did not seem influenced by the adoption of various methods; the essential point was that the peritoneal sac should be laid open. It would thus appear (as was suggested in the debate) as if the effused fluid were itself a source of danger; but that it is absolutely necessary to "alter the character of the inflammation" by the injection of iodine, carbolic acid, or other irritants is still an open question. Dr. Knaggs and Mr. Clarke are to be congratulated on the result of their bold treatment, which may well be adopted in similar cases uncomplicated by active tubercular disease of the lung or ulceration of intestines. Such cases in the adult are not so very common, and their diagnosis is not always simple; but that the local tubercular process may be quite arrested and the general condition of the patient vastly improved by local drainage (aided, of course, as Mr. Parker pointed out, by general treatment) has been amply shown.—*The Lancet*, November 5, 1887.

EGYPTIAN TAMARIND FOR HEMORRHOIDS.

In the *Medical and Surgical Reporter* for November 12, 1887, Dr. J. C. BROBST calls attention to the use of Egyptian tamarind for bleeding hemorrhoids, and states that in his practice he has had most extraordinary demonstration of its curative powers in many cases which had been by others deemed incurable. He employed the decoction of the tamarind flower in doses of 3 or 4 wineglassfuls, but unfortunately, however, he does not give the quantity of the drug used for making this preparation. After the use of this drug he states that the itching and burning become gradually relieved, and where the affection is complicated, as it usually is, with constipation and a loss of appetite, the good results are especially marked.

NOTES ON THE PHYSIOLOGICAL AND THERAPEUTICAL ACTIONS OF SOLANIN.

According to Clarus, solanin is a narcotic poison which has the property of paralyzing the spinal cord and vagus endings, and of exciting the peripheric nerves.

In former years Geneuil experimented with the drug, and came to the conclusion that solanin exerted its narcotic properties on the medulla oblongata, spinal cord, and nerve-branches, and thereby caused a paralysis of the extremities and of the sensitive and motoric nerves.

CAPPARONI had recently conducted a series of experiments with solanin on man. His results are as follows:

A very small dose of solanin (.10 grm. = 1.54 grains) will cause (especially in individuals with a sensitive stomach) a sensation of burning in the stomach, salivation, and nausea. All these symptoms prove that the drug causes a local irritation. When the drug is given where the stomach has been previously anesthetized, or when it is administered hypodermically, this irritation does not take place.

The same dose causes a lessening of the pulse's frequency and of the respirations, and a decrease of the reflex activity of the excitomotor tendency of the spinal cord and medulla oblongata.

Solanin does not seem to have any influence on the brain-centres; it is not a hypnotic; the pupils do not undergo any change.

In the circulatory system small doses of solanin lessen the rapidity of the heart's ac-

tion and increase the pressure of blood in the arteries.

Toxic doses, however, cause the pulse to increase greatly, and lessen the arterial pressure, and also increase the respirations. Solanin is thrown off by the kidneys, but has no effect on the secretion of urine, neither is it a diaphoretic.

As to its therapeutical actions, the author has found it of great value in cases where it was necessary to reduce the irritability of the spinal cord; also in asthma, in difficulties in walking, and muscular spasms of a peripheric origin, in tremor, etc.

The author usually gave .15 to .30 grm. ($2\frac{1}{2}$ to $4\frac{3}{4}$ grains) daily, divided into a lesser or greater number of doses, according to the special needs of the case.—*Zeitschrift für Therapie*, Vienna, October 15, 1887.

AN ANÆSTHETIC COMBINATION OF CHLOROFORM AND OXYGEN.

In a recently published paper on oxygen in chloroform-narcosis, DR. KREUTZMANN, of San Francisco (*London Med. Record*, October 15, 1887), states that the use of a mixture of oxygen and chloroform for anæsthetic purposes was first recommended by Neudörfer, of Vienna, who anticipated that such a mixture would, on inhalation, cause speedy insensibility without excitement, and be absolutely safe and free from the bad results of the ordinary anæsthetic agents. This recommendation, although Neudörfer's first trial was attended with the best results, has not been followed in consequence of certain difficulties in obtaining by the original method the required mixture of gas and chloroform vapor. Kreutzmann has given up all endeavor to supply the chloroform in fixed doses according to Neudörfer's directions, and now, in order to administer the mixture in an efficient manner, he attaches, with the intervention of an exhausting pump, an elastic bag containing oxygen to Junker's chloroform apparatus. In this way oxygen in the place of atmospheric air is pumped through the chloroform, and the patient inhales oxygen impregnated with chloroform vapor. It is pointed out that some air is taken in at the same time, as it is impossible to exclude this by the mouth-piece.

Dr. Kreutzmann speaks very favorably of the results obtained from the use of this mixture in twenty-three operations of different kinds, performed by Dr. Morse, of San Francisco, on patients of both sexes and varying

in age from seven to fifty-six years. In every instance the anæsthetic acted with extreme rapidity, and repeatedly after a few deep inspirations such a degree of anæsthesia was attained that pain was no longer felt, although reflex action was still maintained. In cases in which deeper narcosis was required further administration of the mixture always removed any tendency to struggling. Children and young subjects were rendered insensible in a remarkably short time, but with drinkers the administration lasted longer. In not a single case was any marked excitement observed. With slight anæsthesia no change took place in the pulse and respiration. In instances of deep narcosis the respirations were accelerated and the pulse-frequency was diminished. In many patients the face became congested and covered by perspiration. After a state of incomplete anæsthesia the patient "came to" at once when the inhalation of the mixture had been arrested, and after a more prolonged and deeper narcosis there was for some time a quiet sleep, which, however, did not resemble in any way the deep coma observed after the administration of ether or of pure chloroform. Invariably the patient in recovering from the effects of the anæsthetic became conscious at once, and did not suffer subsequently from headache, vomiting, or nausea. Whether death from chloroform may be avoided by practising this mode of administration remains to be determined by further and more extended experience, but the small quantity of chloroform that is thus used, and the almost complete absence of any subsequent bad effects, permit us, Dr. Kreutzmann thinks, to entertain the best hopes in this respect.

HYDROGEN SULPHIDE IN ASTHMA AND CHRONIC BRONCHITIS.

DR. BATTISTI (*London Med. Record*, October 15, 1887) has experimented upon patients affected with chronic bronchitis and asthma. He finds that his patients, after absorbing during three months, twice a day, monosulphide of sodium, have experienced neither the least disgust nor slightest irritation of the stomach. He proceeds as follows: Lehmann having shown that the absorption of carbonic acid by the stomach is easier when fasting, Dr. Battisti prescribes the ingestion of sulphurous water fasting, or four hours after meals. In order to avoid repugnance he uses the following formula: Monosulphide of sodium, 1

gramme ; distilled water, 500 grammes. One teaspoonful of this solution contains one centigramme of the monosulphide, and he gives 1 or 2 spoonfuls a day, according to the toleration by the patient, which is equivalent to about one litre of Eaux Bonnes water. Calculations based on the chemical equivalents of monosulphide of sodium and of carbonic acid show that one-quarter of a litre of this gas is sufficient to entirely decompose one gramme of monosulphide. The patient, therefore, takes 1 teaspoonful of the sulphurous solution, and immediately afterwards 1 soup-spoonful of Rivière's potion, or a glass of seltzer water. Rivière's potion is preferable on account of its lesser volume. Dr. Battesti has obtained the best results with this treatment, without its producing any disgust or irritation to the patient.

Reviews.

TEXT-BOOK OF THERAPEUTICS AND MATERIA MEDICA.

By Robert T. Edes, A.B., M.D.

Philadelphia : Lea Brothers & Co., 1887.

When it was announced that a new work on therapeutics was about to appear from the pen of Professor Edes, we looked forward with much eagerness to the expected addition of a new American classic to the already long list of therapeutic treatises, and thought that perchance the well-known volumes of Bartholow and of Wood would be superseded by a fresher and more learned rival. The eagle seems, however, this time to have plumed its feathers for a very lowly flight, and instead of a classic, we are astonished to find that the late professor of Harvard University has written a small book which bears the same relation to a full treatise on therapeutics that a two years' medical course does to a three or four years' curriculum. The work is a sort of primer of the subject, which may be useful for students to cram from, but can be of but little value to any one who desires to thoroughly study the most important of all the branches of the science and art of medicine. Perhaps we can convey our idea of the aims of the book by stating that it should be classed as a modern representative of Biddle's *Materia Medica* and of Neill and Smith's *Compend* of a still earlier generation. Of course a reviewer cannot be expected to waste time in reading through an elementary book like the present. He is justified in taking out a few articles and from them judging the rest. We primarily selected the

article on digitalis as a specimen article. We find that the whole subject of physiological action and therapeutic use of this remedy is discussed in about a page and three-quarters, and even the terse, dogmatic statement of effects in this article is so out of concord with the teaching of most leading physiological therapeutists of the day, that it is of the highest importance that the author should elaborate the page or two into a long article and demonstrate the correctness of his views. That "digitalis finally causes the paralysis or exhaustion of the heart and of the vaso-motor system and death by paralysis of all cardiac nerves," is certainly open to challenge. The statement, "The change from the strong to the weak pulse may take place suddenly, especially on exertion. This is spoken of as the cumulative action. It does not, however, imply any actual accumulation of the drug in the body," is also at variance with our own experience and with the teachings, we think, of other therapeutists of authority. The so-called cumulative action of the drug is not the sudden change from the strong to the weak pulse, and does, to our thinking, apply an actual accumulation of the drug in the body. As an instance of what is really meant by the cumulative action we may cite a case from our experience of a patient with excessive effusion in the pleura who had been taking digitalis for some weeks without sensible effect, when one morning the pulse suddenly dropped from about 90 to 70; the next day the pulse was 60, then 50, then 40, the beats remaining strong and full. This sudden excessive action almost invariably develops when there has been no diuretic action of the drug, and is not rarely seen after tapping for ascites when digitalis has been previously given steadily for a length of time. Under these circumstances the obvious explanation is that the digitalis has been long in the serum throughout the body, and that the withdrawal of large quantities of the fluid from the abdomen by tapping, and the consequent removal of the pressure from the outside of the blood-vessels, causes a relaxation of those blood-vessels, which is followed by a rapid absorption of serum with its load of digitalis, so that at once a very large amount of the poison is precipitated upon the heart. We also notice in this article on digitalis the statement that "the digitalin of the last edition of the *Pharmacopœia*," etc. There is no such thing as the digitalin of the last edition of the *Pharmacopœia*, this preparation having been dropped out at the last revision.

There is such a demand for short-cuts to knowledge in America and for cram-books that we have no doubt the work of Dr. Edes will sell, but we do not think that it will add to its author's reputation.

SEXUAL IMPOTENCE IN THE MALE AND FEMALE. By Wm. A. Hammond, M.D., etc.
Detroit, Mich.: Geo. S. Davis, 1887.

The history of human depravity is by no means pleasant reading, but, perhaps, it is necessary to the understanding of certain cases, if their cure is to be sought. Perhaps, too, a writer dealing with such topics is all the better for the absence of prudery, and a business, matter-of-fact manner. Still, if ever a book deserved the seclusion of lock and key this production certainly does. The histories, as given by Dr. Hammond, are certainly graphic, and his devices for the cure or amelioration of these moral monsters are ingenious; but the thought cannot but arise whether it is worth while to attempt any relief for some of them, and whether the physician who aids them in avoiding nature's relentless punishment is not condoning crime and almost an accessory after the fact. The book is easily written, and admirers of "Lal" will recognize the author's characteristic style more readily here than perhaps in more erudite works like his treatise on nervous diseases. Some valuable ideas, too, can be gathered from these pages, which tend in the direction of rational treatment, and the adaptation of special means and special ingenuity to special cases, for Dr. Hammond follows no beaten track if he knows it. From what we have said above, the reader may infer that "sexual impotence" is by no means a work for promiscuous reading; in fact, it is about the most dangerous one for such a purpose with which we are acquainted. This, however, is inseparable from the nature of the task that the author has undertaken, and we commend the work to those whose special pursuits lie in the direction of those diseases and conditions which nature has entailed upon the vicious for the best of purposes, and which man should not entirely relieve even if he could.

E. W. W.

THE DETERMINATION OF THE NECESSITY FOR WEARING GLASSES. By D. B. St. John Roosa, M.D., LL.D., etc. Physician's Leisure Library.
Detroit, Mich.: Geo. S. Davis, 1887.

The ignorant physician, ignorant of the cunning art of the oculist, may search many primers and handbooks for advice on the topic discussed in this book. He will gen-

erally be disgusted, and conclude that if the specialist has any really valuable hints to give him, the fear of trusting him too much, and of lifting the veil of the oculistic Isis too high, has deterred him from revealing them. There is only one way that will occur to him, —*i.e.*, to study the specialty himself, and "become as gods," knowing all about it, as well as his teachers. Dr. Roosa, however, has something to tell, that he tells without fear of rivalry, and has produced the most useful monograph which we have yet seen. By reading it carefully, and getting this simple and cheap apparatus that he recommends, one can without an excess of knowledge decide pretty readily as to any necessity for sending his patient to the higher powers. He also has the good old-fashioned way of talking plain English, and when he uses technical terms he explains them, so that the explanation explains, and is not, as so often, worse than the problem. We think the trifling cost of this book will be money well expended by any one in the profession and in Cimmerian darkness on the subject, that so many are in, who will buy it and read it until its contents are familiar.

E. W. W.

CYCLOPÆDIA OF OBSTETRICS AND GYNÆCOLOGY. Vol. VI. and Vol. VII. A Handbook of General and Operative Gynæcology. By Dr. A. Hegar and Dr. R. Kaltentbach. In two volumes, Vol. I. and Vol. II. Edited by Egbert H. Grandin, M.D., etc.
New York: Wm. Wood & Co., 1887.

The value of the Cyclopædia becomes more evident with the issue of each succeeding volume. Of the two before us, Vol. VI. of the series contains sections on gynæcological examinations, minor therapeutic manipulations and elementary operations, and operations on the ovaries. The discussion of anæsthesia as used for examinations is interesting. The author prefers ether. The directions given for the various procedures are simple and intelligible. Everything necessary is well illustrated by good wood-cuts. As regards dilatation of the urethra to admit the finger, we find the author expressing the idea that patients, after this method of exploration has been employed, "are not secure against permanent incontinence." In regard to specula and the methods of using them, we find little or nothing novel or original. Cervical dilatation the author produces by "solid, bougie-like instruments of unchanging size." The author's are of hard rubber, cylindrical, not conical like those of Tait, but with conical tips. The diameters increase

from two millimetres by degrees of one millimetre. Eversion of the rectum is recommended for inspecting the lower part of the anterior rectal wall ; for the rest specula are needed.

Accidents following the use of vaginal injections are attributed by the author to all forms of instruments, but less to the irrigation than to the rubber compression syringes. Many accidents are not easily explained. The uterine syringe, if used with care, is not entirely abandoned. The canal should always be somewhat dilated previous to their use. Irrigation of the uterine cavity is considered a valuable therapeutic agent.

Pessaries are considered as a necessary evil. Everything possible to benefit the existing condition should be done before their introduction. Abdominal belts are recommended for a certain class of cases. Studley's double ring pessary is described, along with many other new and rare instruments. Tampons, local abstraction of blood, and artificial impregnation are discussed. Of the latter procedure he says very truly that so many causes not requiring it may be found as the real factors in the causation of sterility that but little remains for artificial impregnation to do ; it may be employed in stenoses, especially flexion stenoses in the upper part of the cervical canal. "Every physician," he says, "will probably experience a feeling of disgust at being concerned in such procedures ;" "but there are motives" which may overcome such feelings. A more important matter than mere squeamishness is the extreme doubtfulness of a successful result. The spermatozoa are so fragile that their mere transfer to a syringe may result in their heads becoming separated from their tails. In order to win in this game both heads and tails are required, it seems. Massage in gynecology is discussed pretty exhaustively, and the author concludes that its results are by no means very valuable. General and special operative procedures occupies the remainder of Volume VI. There is an excellent section on the prevention of surgical infection, and the subject of ovariectomy finishes the volume.

The second volume contains operations on the tubes, broad ligaments, and vagina ; operations in urinary fistulæ, prolapse operations, and operations on the vulva and perineum. The whole subject of the disease of the tubes, and operations for their relief and cure, is so new, and is exciting so much interest, that on that account, if no other, the present volume will be eagerly sought and

studied. All that illustration can do will be found here, and the various operations and modifications of operations are minutely and clearly described. E. W. W.

A SYSTEM OF GYNÆCOLOGY BY AMERICAN AUTHORS. Edited by Matthew Mann, A.M., M.D., etc. Vol. I. Three colored plates and two hundred wood engravings.

Philadelphia : Lea Brothers & Co., 1887.

"Gynæcology," the editor tells us, "has now grown to an extent which requires for its thorough treatment the co-operation of representative men." Growth of Western towns and cities pales before the achievements of gynæcology,—twenty years ago nameless, to-day full-grown. In these few years we have witnessed the development of a science ; is it possible, asks the observer, for another score of years to give us another equal increment ? Will not research and daring exhaust the field ? Will not subdivision and specialism reach ere long their ultimate atoms adamant and indivisible ? Has not the field been exhausted by the reaper, the gleaner, the very birds of the air, and have we not, in reaching the microscopic stage of investigation, neared the end ?

Dr. Mann, in any case, has done us a service. If this be almost a completed science, then he has gathered it together in one perfected whole, and his work will be all the better appreciated.

The excellent historical sketch of gynæcology, by Edward W. Jenks, M.D., opens the volume. There is shown its progress from Hippocrates till to-day,—progress very slow and tortoise-like for centuries, then very rapid and electric for the past few years. As for its further progress, in reading the flood of literature it evokes one is struck with the universal sameness of the material, and the vast efforts made by the writers to strike out new paths, efforts by no means always successful.

"The Development of the Female Genitals," by Henry J. Garrigues, M.D., "The Anatomy of the Female Pelvic Organs" by Henry C. Coe, M.D., follow the opening chapter. Dr. Coe has given a very minute, elaborate, excellently-written and profusely-illustrated article. It is by no means dry and unsuggestive, but filled with practical remarks, like a running commentary. "Malformation of the Female Genital Organs" is another excellent article by Dr. Garrigues. "Gynæcological Diagnosis," by Egbert H. Grandin, M.D., marks the commencement of the truly practical part of the book. Here we are introduced to all the many instruments

and varieties of instruments which Smith has appropriated and Jones modified for diagnostic purposes. Good wood-cuts delineate them and careful description tells us how to use them. The author is far from condemning the uterine sound. Except in pregnancy and cellulitis it is incapable of doing harm if properly used. The routine rectal examination he thinks unnecessary, but urges it in virgins, as a preliminary to vaginal examination, often obviating the necessity for the latter. "General Consideration of Gynecological Surgery," by E. C. Dudley, A.B., M.D. In this article general antisepsis, the use of opium, quinine, and ice, are studied; the important question of "when to operate" is discussed, with "preparatory treatment;" in short, all the practical minutiae of operative procedure are carefully enumerated. "General Therapeutics," by Alexander H. Skene, M.D., is another valuable contribution, which aims to give the reader "a rational system of therapeutics." The study of different remedies and their value in this chapter is excellent.

"Electricity in Gynecology," by G. D. Rockwell, A.M., M.D., and "Menstruation and its Disorders," by W. Gill Wylie, M.D., form the next two chapters, followed by one on "Sterility" by A. Reeves Jackson, A.M., M.D. "Diseases of the Vulva," by Dr. Matthew D. Mann, treats of malformations, injuries and wounds, hernia, vulvitis, ulcerations, œdema, phlebectasia, and hæmatoma, of the skin-diseases affecting the vulva, of vaginismus and coccydinia, and contains, besides wood-cut illustrations, one very fine colored plate of lupus hypertrophicus. Throughout the article the treatment of disease occupies a prominent place, and adds greatly to its value.

Dr. Chauncey D. Palmer contributes the article on "Inflammatory Affections of the Uterus;" also well illustrated, and containing two excellent colored plates exhibiting erosions of cervo-granular degeneration, elongation, catarrh, laceration, chronic hyperæmia, metritis, and endometritis.

"Sub-Involution of the Uterus and Vagina" is by Thaddeus A. Reamy, A.M., M.D., and "Peri-Uterine Inflammation" by Richard B. Maury, M.D. The latter is of especial interest at present, and gains added value from its discussion of the benefits of the antiseptic midwifery. The volume concludes with "Pelvic Hæmatocele and Hæmatoma," by Ely Van De Warker, M.D. These varied and valuable articles cover seven hundred and sixty-nine pages, and in almost, if not

all, cases exhibit a thorough, systematic, and complete study of these various subjects in the light of the knowledge of to-day. We think this work as far as published bids fair to stand first in works of the kind, and contains all that is to be found in many books and scattered in many periodicals here brought together in one accessible and not too voluminous whole. E. W. W.

TRANSACTIONS OF THE MICHIGAN STATE MEDICAL SOCIETY. Vol. IX. 1887.

Detroit: D. O. Haynes & Co.

TRANSACTIONS OF THE MEDICAL ASSOCIATION OF THE STATE OF MISSOURI. Thirteenth Annual Session. 1887.

St. Louis: W. E. Corveas.

The Transactions of the Michigan Society present us with a number of papers of considerable interest. "How Typhoids are Generated in Germany" is an able article on sewage irrigation. "Some of the Cold-Weather Communicable Diseases" discusses the communicability of diphtheria, smallpox, scarlet fever. Evidently the society, in its discussion of the paper, felt no hesitation in struggling with the great bacteria problem. "The Nature and Treatment of Cholera Infantum" deals with the question of a special ptomaine as the active agent in the production of the symptoms of the disease. Chemically isolated by the writer, Dr. Victor C. Vaughan, he is prepared to prove that it exists in cheese, ice-cream, and milk under certain conditions, and "may be made artificially by the action of nitrous acid gas at a low temperature upon the nitrate-butyrate or other salt of anilin." It is "decomposed when heated with water to near the boiling-point, and is developed in milk by the growth of a germ which multiplies very rapidly when the conditions are favorable." The conditions—limited air and a warm temperature—are found when newly-drawn warm milk is placed in tightly-closed cans and then kept warm. This discovery of Dr. Vaughan has attracted much attention during the past year, and, while perhaps too much stress has been laid upon its importance, it is well to bear it perpetually in mind, though as yet none of the methods proposed for its utilization, none of the agents advanced as antidotes for tyrotoxicon, seem effectual remedies. Time alone will tell whether in this discovery we have the clue both to the causation of certain diarrhœas and at the same time to an accurate method of cure. The whole article, however, deserves a thorough study, not omitting from

attention Dr. Vaughan's method of preventing by proper care the formation in milk and milk-compounds of this obnoxious substance. Perhaps the most suggestive clinical observation made by the author is upon the recurrence of diarrhoea when even good milk is again reverted to as a food after milk containing tyrotoxin has already set up its diarrhoea. This observation, many times repeated, seems to show that there is still left, after the violent vomiting and purging, something—organisms of the nature of bacteria or ferments—which finds in the pure milk, when given as food, a field for the development of more poison. This is analogous to what occurs after apparent recovery from Asiatic cholera, where a number of observers have attributed serious and even fatal relapses to a few teaspoonfuls of milk. The author of the paper promises to give to the world the results of his further experiments, undertaken "with the object of ascertaining the effects of certain germicides on the development of the poison."

The volume contains many papers of interest: a very good one on "Constipation;" one on "Bergeon's Method;" on "Imperative Impulses in Mental Disease;" on "The Analogy between Acute Idiopathic Pleuritis and Acute Articular Rheumatism," in which the writer endeavors to prove the essentially identical causation of both diseases; very good articles on "Pseudo-Membranous Sore Throat" and "A Few Thoughts on the Nature of Diphtheria."

In the department of "Surgery" we find "Antiseptic Surgery for the Country Physician," an article on "Intubation and Tracheotomy," on "Treatment of Hemorrhoids and Fissure of Anus by Gradual Dilatation," on "Nasal Obstructions." Under "Ovariectomy" articles on "Ophthalmia Neonatorum," "Vaginismus," "Is Gynecology Fashionable?" "On the Radical Cure of Retrodisplacements of Uterus and Procidentia by Surgical Operation," a case of hysterectomy, and other papers. These are all good, live papers, and show a somewhat high average of excellence.

The Transactions of the State Society of Missouri are more brief, but have excellent articles on a variety of topics, among others, "On the Practical Applicability of the Theories of Bacteriology," "Proper Food for Infancy and Childhood, etc.," "Milk as a Source or Medium of Infection;" in fact, a very considerable amount of good, substantial medical work is shown in these papers, proving that the West is fully capable of doing its share in the march of progress. E. W. W.

ANATOMY, DESCRIPTIVE AND SURGICAL. By Henry Gray, F.R.S. Edited by T. Pickering Pick. A new American from the eleventh English edition. Thoroughly revised and re-edited, with additions, by William W. Keen, M.D. To which is added Landmarks, Medical and Surgical. By Luther Hoiden, F.R.C.S.

Philadelphia: H. C. Lea's Son & Co.

How many thousand copies of Gray's "Anatomy" have been sold to the rising generation of doctors in the United States during this last twenty years no one who has not access to the books of the Lea Brothers can well tell. But certainly this work has been a mine of wealth, which has been both carefully and successfully worked by the American publishers. It would be very interesting to know how much of the stream of gold has dribbled into the pockets of the authors and editors of the book. The present volume maintains all the features which have given so great popularity to the work of Dr. Gray. It has been brought up well abreast to the times by the English editor, and has added to it very much of interest during its passage through the Philadelphia press. In most of the figures the arteries are colored red, the veins blue, and the nerves yellow; also in the figures of the bones attachments of the various muscles are outlined red. This certainly gives not only greater picturesqueness but greater distinctness to the drawings, and adds very much to the ease with which they are rapidly comprehended on inspection. Altogether the book, as it now stands, is probably the most useful for immediate hurried reference, as well as for the purposes of the student, that there is in the language. Of course it lacks the completeness and minuteness of such a great work as Allen's "Anatomy," or even the two-volume book of Sharpey and Quain.

INSANITY: ITS CLASSIFICATION, DIAGNOSIS, AND TREATMENT. A MANUAL FOR STUDENTS AND PRACTITIONERS OF MEDICINE. By E. C. Spitzka, M.D.

New York: E. B. Treat, 1887.

We confess to a feeling of disappointment when we found that this work of Dr. Spitzka, of whose approach to our editorial table we had previously heard, was nothing but the second edition of his well-known manual, and not the larger treatise which the preface of the first edition made us hope soon to see. It is hardly necessary to notice in detail the second edition of a book which follows so soon upon the first. It is sufficient to reiterate the opinion, that we affirmed after

careful reading of the first edition,—namely, that the work is, upon the whole, the most satisfactory study of insanity that we know of in the language. It is a great pity that Dr. Spitzka could not find a publisher who would make his volume more attractive in the matter of type and paper. Possibly fifteen cents a volume are saved in the cost of publishing the book, but we opine most readers would sooner give three dollars for a handsome book than two dollars and seventy-five cents for the one that is before us.

Correspondence.

LONDON.

(From our Special Correspondent.)

I am writing to you in the beginning of November, but the shades of the waning year are already falling upon us. We have passed through the first outburst of acute catarrhs and congestions begotten by cold and damp, or by the organisms, as some of our friends would say, which arise and flourish in the inclement and unpropitious meteorological conditions that characterize the opening of an English winter. Christmas will presently be here, with the pleasant respite from labor, and the few days of air and sunshine with our friends in the country, which, it is to be hoped, some of us may manage to secure. Meanwhile, we are hard at work. The winter session at the medical schools is in full swing. The societies leave us hardly one quiet evening at home out of the six. The journals are supposed to be publishing more attractive and useful communications than those which satisfied the editorial conscience and their limited circle of readers in the silly season. With all this the question rises in the thoughtful mind, What progress can be claimed during the year that is dying? As one grows older and more gray one comes to be more accustomed to slowness in real advance, to be satisfied rather with steady, even if it be but small, improvement, than to be prospecting and retrospecting for startling epoch-making discoveries.

Therefore it is that I am not dissatisfied with our record for the passing year. From my present stand-point I can see that we are nearer the truth in certain great questions pathological, and have attained to greater success in certain great matters therapeutical, than was our position in November, 1886.

Beyond all question the greatest develop-

ment in treatment with us during the year is to be found in *surgery*. I do not mean by this to directly insist upon the successes achieved by English surgeons in their formidable undertakings on the brain and abdominal cavity, brilliant though these undertakings are. I do not refer to operations, but to *operating*. There is something about the whole proceeding in the excision of a breast or the removal of a kidney nowadays that strikes us as perfectly unlike the method of operating a few years ago. At the bottom of this change for the better lies one great principle,—cleanliness. Whether we choose to regard this as a pathological or as a therapeutical advance matters nothing: when the science of medicine is perfect, pathology and treatment will stand side by side in their mutual interdependence. Perchloride of mercury has undoubtedly attained a high position as a disinfectant and antiseptic during the past twelve months, while iodoform holds its own in its proper sphere of application. With these and other antiseptics, and with the clear appreciation of the principles on which they act, the surgeon now finds the field of his operations increased to an almost unlimited extent.

A continued effort has been made in England, during the year, as well as on the Continent and with yourselves, to *press* into the service of the physician those disinfectant measures which have gained so much credit for the surgeon. But, unless where the knife can reach, I fear but little real improvement has been effected in this way. We can now treat empyema with something approaching satisfaction, but phthisis remains an *opprobrium redendi*. Intrapulmonary injections have been tried without success,—to put the result as favorably as possible. Inhalations continue to hold a place in the practice of many, but are as consistently deprecated by authorities of equal eminence. The year has practically seen the birth and the death of the Bergeon treatment in this country. I have failed to find a single word spoken in favor of intrarectal injections in England, always excepting the occasional record of a successful case, valueless, of course, from a scientific point of view. Not that the method has been condemned untried. Although we have not arrived at the pitch of enthusiasm on this subject which you appear to have reached in the States,—to judge by the number of advertisements of apparatus in the sheets of your medical journals,—still, I am assured that the gaseous enemata have been

fairly tested. With this experience fresh in our minds, let us be more cautious and critical in the future.

When we turn to the department of diseases of the *heart*, we are tempted to point at once with a sense of satisfaction and insular pride to the secure position which strophanthus continues to hold among the cardiac tonics. Of the value of this drug there can be no doubt. Much has been written, in a loose and casual way, about the use of strophanthus in dropsy; and many comparisons, for and against it, have been drawn with digitalis. All this is little to the point; but the fact remains clear and unquestionable that Professor Fraser, of Edinburgh, has introduced to us a cardio-vascular agent of the first rank, which rapidly increases the cardiac force and raises the arterial pressure in cases of dilatation of the heart, and which evidences its power for good both by free diuresis and by speedy amelioration of subjective distress. With the advance of strophanthus in estimation may be said to have occurred the comparative decline of convallaria and caffeine, about which we heard so much a few years ago. Neither of these drugs appears to possess the reliability of digitalis and strophanthus. It is only our leading authorities that seriously attempt to discriminate the cases of heart-disease suitable for each of these drugs respectively, or for combinations of any two of them. I gather that in England there is a pretty general agreement with the view that has been lately arrived at on the Continent from experimental evidence, that caffeine is strictly a direct renal stimulant, not a cardiac tonic; and that to secure its full action in dropsy we ought to combine it with digitalis, convallaria, or strophanthus.

Our specialists in diseases of the *nervous* system are not as a body known for their confidence in therapeutics: their attention is so fully occupied with the investigation of the pathological and regional diagnosis of cerebral and spinal disease that they have but little time or enthusiasm left for other than routine treatment. Yet the soundness of the method that they pursue—the thorough investigation of the nature of disease as the first step—has lately been proved by brilliant therapeutic results. Foremost in this connection comes, of course, the surgical treatment of tumors of the brain and cord, some instances of which I have had occasion to mention in my recent letters to you. Next in importance to these results must be regarded, in my opinion, the discovery and treatment of peripheral paralysis,

especially alcoholic paralysis. This disease proves to be far more common in England than we had any idea of; and it is not easy to exaggerate the amount of benefit that has been accomplished for patients since it came to be generally recognized and properly treated. No clearer illustration than alcoholic paralysis could be adduced at this moment of the soundness of the view expressed in an early part of this letter, that the best kind of progress in medicine is that which is slow, steady, and unphenomenal.

We have heard very little, so far, in England of the application of the newer methods of investigating and treating diseases of *digestion*. You know what I refer to,—the method of systematically emptying the stomach by various means, whether after a test-meal or not, and whether for the purpose of diagnosis or of treatment. Abundant attention has lately been drawn to the use of the stomach-tube in articles in our journals bearing on the observations of German and Russian physicians, and only a couple of weeks ago Dr. Clifford Allbutt brought the subject forcibly before the Medical Society of London. I fear our patients have too much of a dislike—not to say horror—of forcible evacuation of the stomach for this method ever to be much practised here, unless in urgent cases of dilatation, when relief by siphoning is eagerly practised by the sufferers themselves after a little education. We must be content to accept the conclusions arrived at by our continental *confrères* when they are a little more settled than is the case at present, and then, I trust, we shall be able to make a considerable advance on the present system of treating indigestion.

In the department of diseases of the *skin* we have again to acknowledge that we are content to adopt improvements that have recently been introduced to our notice from Germany. The paper which Dr. Unna, of Hamburg, read in Dublin, in August, on the treatment of cutaneous affections by glycerin, gelatins, salve-mulls, and plaster-mulls, appears to me not only to be a contribution of the greatest practical value, but to deal with the therapeutics of diseases of the skin in a far more scientific fashion than had ever previously been attempted.

Among the *newer drugs* that we are now using are jumbul-seeds and saccharin. Both of these may be of use in some cases of diabetes to make life more tolerable, if not to cure the disease. Saccharin is already being extensively employed both by the profession

and by the laity, and will, let us hope, diminish the amount of "liver" in this country. So far I have heard nothing in England of your wonderful new remedy stenocarpine, or gleditschine, or whatever it is to be called, but it is certain to be tested at the earliest opportunity by some of our very active ophthalmologists.

I feel that I cannot fittingly conclude this brief and imperfect summary of the principal advances of therapeutical science in England during 1887 without recording an attempt that is now being made to organize our work in this subject. I refer to the establishment of a therapeutical society in London. I cannot tell you much that is definite about this proposal; but it is at least encouraging to know that thought is being stirred among us in the interest of scientific treatment. So far, I believe, the organization is mainly or entirely on paper; but if it be the case that Professor Ringer has accepted the presidency of the society, and as the movement appears to be in the hands of a very active council, a good beginning ought to be secured for it. No doubt there will be plenty of advice forthcoming as to the ends and methods of a learned body of this kind. Possibly it may follow the lines of the better part of Dr. Whitla's Dublin scheme, which I criticised freely in my last letter to you. The field lies open to our hospital physicians; the material is practically unlimited; the results are highly promising. Let us hope that by this time next year it may be in the power of your London correspondent to render you a better account of service done in that department of our profession which the *GAZETTE* so worthily represents, and the promotion of which ought to be and ever must be the chief end and glory of scientific medicine.

PARIS.

(From our Special Correspondent.)

When Dr. Luys read before the Academy of Medicine his extraordinary memoir on "Therapeutics from a Distance" (*"Thérapeutique à Distance"*), it will probably be remembered that a committee was appointed to examine the facts critically. But academical committees are proverbially slow, and medical societies have begun inquiries of their own, without waiting for the decision of the old lady in the Rue des Saints-Pères. At a meeting of the Therapeutical Society, Dr. Constantin Paul related the following experience.

He supplied Dr. Bourru, of Rochefort, with a very sensitive subject, and requested him to repeat the experiments in question. The conditions were the best possible; but few persons were present, and full latitude was left to the performer. If Dr. Bourru was unsuccessful, he must blame no one but himself. The first experiment was with a vial of alcohol; but, as the container was, contrary to all rules, left uncorked, and the sense of smell is very acute in hypnotized subjects, the whole trial is questionable. Dr. Bourru pointed out the titubating gait of the patient when just awakened; but the same symptoms being observed when subjects recover from the hypnotic state, the experiment remains doubtful. In the next trial, the vial was applied to the right side of the occiput. The patient manifested a feeling of comfort and satisfaction that should have been caused by the cherry-laurel water supposed to be in the vial. Unfortunately, owing to some misunderstanding, the pharmacist had filled the bottle with plain water! Five or six other experiments were quite as doubtful, and prove absolutely nothing. No reason exists, therefore,—and it should be widely made known,—for the public excitement consequent upon Dr. Luys's communication. Dr. Voisin, having, on his side, instituted another series of experiments with different subjects, reached the same conclusion,—namely, that Drs. Luys, Bourru, and Burot are mistaken. Before the Medico-Psychologic Society he declared it his opinion that the phenomena attributed to the so-called "therapeutics from a distance" are the outcome of suggestion and the retentive memory of hypnotized subjects. The facts related were as follows: The patient, a female, having been brought into hypnotic sleep, and perfect silence being observed by the bystanders, a number of sealed vials were placed in contact with the subject, who had been left in ignorance of the intended experiments. No change of any sort was observed. Then Dr. Voisin, holding an empty vial, drew near her, saying he was going to try on the patient the effects of medicaments from a distance, and would successively bring by her several medicines, which would diversely affect her, according to their nature. "Here is alcohol," he said, "which will rapidly cause inebriety, the effect disappearing as the vial is removed." Having brought the empty vial close to the patient, symptoms of inebriety were manifested, which disappeared when the bottle was removed. Next, simulating the motion of

taking other vials, but always bringing the same empty bottle close to the subject, he announced the different effects to be expected from strychnine, cherry-laurel water, valerian, pilocarpine, etc. The phenomena predicted never failed to appear. Two months later Dr. Voisin put the same subject again into the hypnotic state, and made, as before, the announcement that the patient would be able to distinguish the medicaments by the symptoms she would exhibit. Then, repeating the same performance as before, but not naming the supposed medicine, he brought the empty bottle close to the patient. Strange to say, with every pretended change of vial the subject manifested the same symptoms as in the previous experiment, and precisely in the same order, without a single mistake, thus illustrating the extraordinary memory of hypnotized patients. The only conclusion to be drawn from the foregoing is that *thérapeutique à distance* is a delusion, and that the phenomena observed belong to the domain of psychology, not therapeutics.

Such is not the case, however, with *complaints against antipyrin*,—a topic decidedly therapeutical. Poor antipyrin! evil days seem to have fallen upon it. Barely six months ago praises only could be heard from all sides, and now complaints and condemnation come pouring in from all quarters. The pharmacists were the first to find fault, and with good reason. The article supplied for some time past by the German patentees has been most impure and unfit to use medicinally, owing to its offensive smell of benzole. As an excuse, the manufacturers claimed it was necessary to crystallize antipyrin from a benzoic solution, and that the demand has been so large and unexpected that it had not been possible to sufficiently free the crystals from the solvent. The Paris Pharmaceutical Society made short work of such pretexts by showing that antipyrin can very well be crystallized from ether, or even distilled water, and that pharmacists had been obliged to thus purify themselves the bad chemical supplied by the monopolists; so that there was no excuse, if there ever be, for issuing an impure, foul-smelling medicine. It is even said legal steps are to be taken to set aside the French patent as null and void. With this side of the question we have nothing to do; but what is of more concern—even than defective fabrication, probably temporary—is the number of complaints made by physicians against the effects of antipyrin. Dr. Finot, of the Medico-Practical Society, was the

other day relating how a patient, treated last October with two hypodermic injections of antipyrin, suffered two days later from cellular induration and erysipelas to such an extent as to be obliged to keep stooping forward from pain and inflammation. Proper antiphlogistic treatment, during ten or twelve days, avoided the formation of the threatened phlegmons, but two painful indurated centres are still existing, while their resolution remains yet doubtful. Dr. F. Roux made a report equally unfavorable. "I gave antipyrin," he said, "in the doses recommended to three patients suffering from migraine. One experienced profuse perspiration, nausea, and vomitings. The pain was in no way relieved, and, when the fit had run its natural course, the patient felt weaker than ever before. The second was not hurt by antipyrin, but neither was he relieved in the least. And, finally, the third patient experienced some marked relief, but not the instant cure spoken of by Dr. Germain Sée. In a patient suffering from rebellious sciatica antipyrin exhibited both through the stomach and hypodermically produced no result. The injections were very painful, but the aching remained. And, lastly, a hysterical patient, affected with abdominal neuralgia, took antipyrin without the slightest benefit. I should like to know whether my brother physicians have observed similar results."

The therapeutic action of *bismuth salicylate* offers some peculiarities that it may be well to bear in mind. Dr. Legendre, the other day, was relating before a medical society some facts which had somewhat puzzled him. In Dr. Grancher's service it seems salicylate of bismuth is frequently employed in gastrointestinal affections and typhoid fever. For some time past it has been noticed that children subjected to this treatment often passed salicylic acid in their urines, and occasionally experienced the well-known cerebral disturbances characteristic of salicylic acid. Having inquired of the hospital pharmacist, he was only informed that the salt of the market is apt to be, at times, a mere mixture of salicylic acid and subnitrate of bismuth. Dr. Legendre thought the statement might be true, yet the explanation hardly satisfied him, and he called upon some of the members present for some better solution, when Dr. Bouchard remarked that there are two compounds of bismuth and salicylic acid, one basic and the other acid, and both easily give up their acid, especially the non-basic salt. Salicylate of bismuth, as such, is not an anti-

septic, but becomes one whenever fermentations take place, which set the acid free. When salicylate of bismuth is administered alone, as various fermentations and putrefactions occur in the intestines at the time it reaches there, acids are generated,—the hydrosulphuric among them,—which displace the salicylic acid from its combination. The latter will now appear in the urine, while the fæcal matters will be colored black by sulphide of bismuth. But if salicylate of bismuth be associated with other antiseptic substances, most likely such black coloration will not be observed, and no salicylic acid will appear in the urine. Whenever such symptoms are noticed, they can be made to disappear through the administration of antiseptics, because on effecting intestinal antiseptics the decomposition no longer takes place.

Melinite, as an explosive, is, of course, chiefly of concern to surgeons, but as a poisonous compound it belongs to therapeutics, while its novelty provokes the curiosity of all. Dr. Tachard, an army surgeon-major of the first class, has given an instructive account of the effects of the new French explosive. An accident occurred, not long since, in a fortress while men were preparing melinite bombshells. Out of the seventeen soldiers within range eleven were killed on the spot, or died shortly afterwards. The survivors' wounds deserve the following remarks: To begin with, no burns could be noticed, and no accidents that could be attributed to the inhaling of poisonous fumes. Hence melinite acts only mechanically. From a surgical point of view, a fact deserving notice is the great number, depth, and small size of the wounds, dangerous in character, caused by very minute fragments of cast iron, barely larger than a grain of sand. The particles extracted were of irregular shape, with sharp edges, but free from smell or foreign chemical compounds. A remarkable fact is that the effects on the bones were strictly local, and no fissures or slits could be observed, such as are seen with ordinary bullet wounds. The extreme violence of the impact suffices to break the bone at the first point of contact, and it is only further on that the parts become broken, as the cast iron penetrates into the bony structure. The general aspect of the wounded is characteristic. The uncovered parts have an intense light-yellow color, rapidly spreading, so as to stain the linen. Deathly pallor overspreads the face. Some patients are almost prostrated; others, on the contrary, are excited, and groan restlessly.

The small wounds riddling the body, and closed with a clot of blood, were about two millimetres (one-twelfth of an inch) in diameter, ten or fifteen centimetres (four to six inches) deep, and contained a parcel of cast iron the size of a grain of sand. The treatment followed was the usual one indicated from the nature of the wounds, and was reasonably successful. But an idea that suggests itself is to use powerful electro-magnets for the purpose of helping the removal of the foreign metallic particles.

An improved formula for *artificial serum* may prove useful to blood specialists. Dr. Mayet, of Lyons, has recommended the following: Distilled water, 100 grammes; anhydrous phosphate of sodium, 2 grammes; sugar, enough to bring the solution to sp. gr. 1.085. As most microscopists are conversant with the metrical system, it is probably unnecessary to translate the foregoing into Troy weights. Dr. Mayet finds the liquid an excellent medium for preserving blood-corpuscles and globular elements without alteration, so that they may easily be counted and examined in cases of anæmia, leucocythæmia, etc. Owing to the density and slight viscosity due to the sugar, and the preserving action of the alkaline salt, the different elements are prevented from adhering together, and equally distributed in the fluid. Only, the liquid layer between the plates being thicker than with other media, the focus must be adjusted so as to distinguish separately the various elements of different densities floating in the artificial serum.

PARIS, November 18, 1887.

OIL OF SASSAFRAS TO DISGUISE THE ODOR OF IODOFORM.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—In your October number I see that "C. E. Dodsley affirms that the addition of four drops of the oil of sassafras to the ounce of iodoform completely does away with the disagreeable odor." You well added, "This is certainly important, if true."

Having had occasion to use a great deal of it in the past few weeks, I tried his suggestion, and find that in the bulk form the oil does disguise the disagreeable odor; but as soon as the iodoform comes in contact with the skin, or with a sore, the oil seems to evaporate, and leaves the odor as pungent as ever. I have given it a thorough trial, and I am sorry to find that the oil does not prevent the

disagreeableness of its application (the smell). I have left the bulk in contact with the open air, and the oil does not evaporate, but, strange to say, it only requires contact with the skin to bring out the full odor. I hope some one else will favor us with his experiments in this line, as I stand open to corrections, and hope it may be proven that I have been mistaken.

Very respectfully,

JOHN H. HARDEN, M.D.

CHERAW, S. C., November 19, 1887.

Notes and Queries.

PEMPHIGUS, ARSENICAL PIGMENTATION, UNUSUAL AFFECTION OF CICATRIX.

At a recent meeting of the Clinical Society of London, DR. HANDFORD (*Brit. Med. Journ.*, October 22, 1887) reported a case of pemphigus occurring in a child aged 13, and terminating in incomplete recovery after nearly a year. The limbs, trunk (except parts of the chest and abdomen), face, tongue, mouth, pharynx, mucous membrane of the nose, conjunctivæ, and orifice of the vagina were all affected. The eruption came out in crops, and was accompanied by rise of temperature. Micro-organisms were found in the bullæ which contained pus, but not in those which contained serum. Quinine in large doses was given with benefit, and arsenic. Of the latter, 15-minim doses of Fowler's solution were given thrice daily, and continued for ten weeks. After this the skin of the whole body was noticed to be dry, brawny, and darkened in color. The axillæ, groins, and abdomen were almost as dark as in Addison's disease. The skin looked dirty, but the color was proved to be due to pigment, deposited chiefly in the rete, but partly in the more superficial epithelium. The arsenic was stopped, and the patient treated by wet-packing, and in a month the skin had resumed its normal, smooth, moist appearance, and much of the pigmentation had disappeared. Also on the hands and feet there were many elongated patches of cicatricial-looking skin, thickened and elevated. These patches were covered with white points, like millet-seeds, just beneath the epithelium, and resembling, to the naked eye, miliary tubercles. They were not tubercular, but consisted of accumulations of degenerating epithelial cells in the deeper part of the epidermis. They disappeared in four or five months. It was possible that this

condition also was due to the arsenic. Several colored drawings and photographs illustrating these conditions were exhibited. A third case of pemphigus was described, in which there was some ground for suspecting implication of the mucous membrane of the intestinal canal. It presented also the atrophied glossy condition of the skin of the hands mentioned in the first case, and which was suggestive of an implication of the peripheral nerves. No definite affection of sensation or of the reflexes, however, could be discovered, though reference was made to the statement of Dr. Pasquale Ferraro, that he had found advanced changes of an atrophic degenerative nature in the posterior horns of the dorsal spinal cord, and also in the peripheral nerves, the ganglia on the posterior nerve-roots, and in the sympathetic ganglia. Two further instances of arsenical pigmentation were narrated, and the opinion was expressed that small doses of arsenic (m̄ v to m̄ x) of the liq. arsenicalis repeated thrice daily for about two months were capable of producing a pigmentation of the skin, chiefly of the abdomen, lower part of the chest, lumbar region of the back, axillæ, groins, and inner parts of the thighs. This condition was not necessarily accompanied by roughness and dryness of the skin, and disappeared slowly in from one to four months, or rather longer.

DR. CROCKER, referring to the pigmentation of the skin, said that this was fairly common on the site of eruption, as a result of the treatment of psoriasis by arsenic. General pigmentation, however, was less common, but did, nevertheless, occur from time to time. He had then under his care a boy with a bullous erythema, which he was treating by arsenic. Latterly the boy's skin had become pigmented. He thought it should be generally known that pigmentation was likely to follow prolonged treatment with arsenic, quite independently of the eruption. It was probably due to a deposit of the metal itself in the skin. The pigmentation lasted a very considerable time, much longer than four months, as mentioned by the reader of the paper.

DR. GOODHART took up the question of fever mentioned by the reader of the paper, he having a case now under his notice, in a little girl, in which high fever occasionally occurred. He said that this case showed very plainly the peculiar property of arsenic to control the disease, though not to cure it. In this case the dose of arsenic required to subdue the eruption was so high that it could

not be continued, and then the eruption recurred.

SIR DYCE DUCKWORTH wished to add his testimony as to the value of arsenic in the treatment of pemphigus. He had formerly been sceptical as to the benefits claimed for its use, but had more recently had ample proof of its efficacy, several cases having been apparently quite cured thereby. In one of these cases marked pigmentation had followed the use of 12 minims of arsenical solution three times a day.

FLUID EXTRACT OF PICHU IN VESICAL CATARRH.

DR. H. S. DELAMERE, of Lubec, Me., referring to the use of pichu in the treatment of catarrh of the bladder, as reported by Dr. G. T. Comstock, relates the following case in the *Medical Record* for November 12, 1887:

"A. B., aged 28, had been suffering for two years from vesical catarrh. He had had gonorrhœa, but a No. 21 (French) bougie passed without difficulty, causing, however, considerable vesical tenesmus. When I was called to see him he was passing urine every hour during the day and four or five times during the night. The urine was alkaline, ropy, ammoniacal, and the microscope revealed pus. I gave the usual remedies prescribed in country practice, such as buchu, uva ursi, etc., but without benefit. I then resorted to washing out the bladder by means of the double-channel catheter, with the effect of relieving my patient slightly. The least exposure, however, aggravated all the symptoms and caused as much suffering as ever. After about a year and a half of constant treatment, with no other result than to keep the disease at bay, I received a sample bottle of fluid extract of pichu, which I tried. After the patient had taken it a few days he expressed himself as feeling better. He was now getting up twice during the night. But the sample was gone, and I was obliged to wait until I could get a fresh supply. In the mean time the patient grew worse; had to get up three or four times during the night. As soon as the drug arrived I commenced giving him 20 drops four times a day, which dose I increased to 30 drops. In a few weeks my patient was so much better that I abandoned washing out the bladder, and to-day he is at work. The urine is clear, free from mucus and pus, and has no ammoniacal odor. He sleeps well, and does not have to get up more than once during the night. Notwithstanding

he has suffered recently from a severe cold, the bladder-trouble has not returned. The man's general appearance is healthy, appetite good, and he seems well."

THE ACIDS OF THE STOMACH IN HEALTH AND DISEASE.

The following are the results of a series of researches made by Drs. CAHN and VON MERING concerning the acids of the stomach in health and in disease (*London Med. Record*, October 15, 1887): 1. The quantity of lactic and hydrochloric acids in the stomach can be determined. 2. In the healthy subject hydrochloric acid is found in the stomach half an hour after eating. 3. Under an exclusive meat diet hydrochloric acid alone is found. 4. In a mixed diet the stomach contains, both in a healthy and diseased state, hydrochloric, lactic, and volatile acids, the quantities varying according to the length of time the food remains in the stomach. 5. In fever and anæmia hydrochloric acid may be wanting, but it is always present in amyloid cachexia, and it is only exceptionally absent in carcinoma of the pylorus. Violet of methylaniline does not form a reliable test for the presence or absence of hydrochloric acid in the stomach.

THE VALUE OF THE FLUID EXTRACT OF QUEBRACHO.

According to the experiments of Dr. M. BOURDEAUX (*Archives Médicales Belges*, April, 1887) the fluid extract of quebracho is a most energetic promoter of healing.

If painted or applied to wounds with a smooth surface it causes at first a slight passing sensation of pain (similar to that caused by an application of collodium), and promotes healing by first intention. It may be also used in burns and wounds caused by freezing, if the ulcerated spot has a healthy, rosy appearance. The extract, when painted on the wound, hardens in the course of an hour, and forms a hard brown crust, which clings firmly to the tissues, and can only be removed with warm water. The secretions of the wound dry up, and healing rapidly takes place, after which the brown crust will fall off.

The great advantage of this treatment is that it does away with all bandaging.—*Le Progrès Méd.*, October 5, 1887.

*THE TREATMENT OF CHOREA AND
OTHER HYPERKINETIC DISEASES
WITH PHYSOSTIGMINE.*

DR. L. RIESS treated forty cases of chorea with physostigmine in subcutaneous injections of .001 ($\frac{1}{84}$ grain) once or twice a day, and found that its use resulted in materially shortening the length of the disease. He also observed a beneficial action of the drug in twelve cases of tremor (senile, alcoholic, and hysteric, etc.), and in four cases of paralysis agitans, in two cases of multiple sclerosis, and in three cases of Charcot's post-hemiplegic chorea. It was tried in five cases of tetanus, but the drug did not have as good an effect as might have been looked for, as it did not lessen the irritability of the central nervous system to any great extent.—*Zeitschrift für Therapie*, October 1, 1887.

*BROM-ETHYL AND ITS VALUE IN
DENTAL OPERATIONS.*

After a dissertation on the different anæsthetics used in surgery, both dental and general, such as ether, chloroform, laughing-gas, etc., DR. JULIAN SCHEPS, of Breslau, launches into an elaborate account of brom-ethyl, and of its great usefulness as a narcotic in dental surgery. He contends that it in a measure combines the valuable properties of both chloroform and laughing-gas. It resembles the former in its easy and simple method of administration, and the latter in the shortness of the effects and the rapid recovery from them. It is, however, neither accompanied by the danger of the first, nor does it necessitate the bulky and complicated method of administration of the second.

Brom-ethyl, ethylum bromatum, or ether bromatus (C_2H_5Br), is a colorless fluid, smelling like ether, of neutral reaction, neither inflammable nor explosive, and evaporating with great rapidity when exposed to the air.

In the year 1849 it was recommended by Nunnely as a general anæsthetic, but was not thoroughly investigated or studied until the years 1876 and 1877, by Rabuteau, who found, when experimenting with the drug on animals, that it was a quicker anæsthetic than chloroform; it had not, however, the irritating properties of chloroform. Brom-ethyl is entirely eliminated by the lungs; no trace of the drug was found in the urine. If the drug is inhaled for more than a half-hour, the animal will gradually die, the death being caused by gradual cessation of circulation and stoppage

of the heart's action. Rabuteau's personal experiences with the drug were as follows: At first he experienced a slight ringing sensation in the ears, and after two minutes of deep breathing there was a lessening of the pulse-frequency and a wonderful decrease of the amount of breath required.

Since 1877 brom-ethyl has been used with great success in operations of the eye and ear by Dr. Turnbull, of Philadelphia, and later Dr. Levis, of the same city, used it in larger operations.

Terillon considers it to be a good local anæsthetic; he used it in spray form, and considered it much better than ether.

Dr. Levis lays particular weight on the remarkable rapidity with which it causes anæsthesia, as it acts in one-third the time that chloroform does, and also calls attention to the quick recovery from its effects and the almost entire absence of nausea and vomiting, and further states that its influence on the circulatory system is but slight.

All practitioners do not, however, by any means agree with Dr. Levis, or join him in praising the drug, as here and there serious results have followed its use. Two cases of death were reported by Dr. Roberts and Dr. Marion Sims as having resulted from its use.

Dr. H. C. Wood says that brom-ethyl has a directly paralyzing effect on the muscles of the heart, and thereby causes a marked decrease of the pressure of blood, and therefore is equally as dangerous as chloroform. Dr. Scheps states, however, that the dangerous symptoms only occur after long-continued inhalation, and he holds that the drug is perfectly safe in short operations.

The drug, says the author, should be administered in the same manner as chloroform, on an Esmarch's mask.

Terillon advises its being poured on a compress which covers the face, but Dr. Scheps says the mask only should be used under all circumstances.

The patient should be placed as horizontally as possible.

The author then gives a minute description of several remarkable cases, and gives a large number of other cases in tabular form.

All the cases relate to the extraction of diseased teeth.

The average dose of brom-ethyl required to produce anæsthesia was 15 grammes (4 drachms).

In most cases the patient was conscious of the extraction, but experienced no pain whatever. The author is of the opinion that in

introducing brom-ethyl into dental surgery he has brought forward an anæsthetic which can be rivalled by none.

Whether this is the case or not is very doubtful, and cannot yet be fully determined, as the drug has been but slightly tested and has but a limited use. It will be difficult, however, to find an anæsthetic which will take the place of laughing-gas.—*Centralblatt für Chirurgie*, September 24, 1887.

ANTIPYRIN INJECTIONS.

In order to avoid the pain consequent sometimes upon the subcutaneous injection of antipyrin, a comparatively dilute solution is used when possible. But in cases where in order to give immediate relief it becomes necessary to inject a large dose, such as a gramme of antipyrin dissolved in a gramme of water, PROFESSOR SÉE adds 15 to 20 milligrammes of cocaine hydrochlorate to each injection.—*Pharmaceutical Journal and Transactions*, October 29, 1887.

COCAINE CHLOROMERCURATE.

The addition of mercuric chloride to solutions of cocaine hydrochlorate intended for ophthalmic practice has been recommended, and a preparation used on the Continent under the name of "Sattler's solution," containing five grammes of cocaine hydrochlorate and two centigrammes of mercuric chloride to one hundred grammes of water, is generally esteemed to have antiseptic as well as anæsthetic properties. In experimenting as to the correctness of this assumption, MESSRS. BALBIANO and TARTUFERI found that when mercuric chloride is added to a solution of cocaine hydrochlorate a double salt is formed, having the composition represented by the formula $C_{17}H_{21}NO_4Cl.HgCl_2$ (*Ann. Chimica e di Farm.*, September, 1887, p. 157). The presence of this compound can be demonstrated by the formation of a white precipitate when the solution is moderately concentrated. The double salt was prepared separately, and was obtained as a white crystalline powder, melting at 122.5° to 123° C., and forming, upon cooling, a hard vitreous mass. It is only slightly soluble in cold water, one hundred cubic centimetres at 21° C. only taking up 0.536 gramme, but it is still less soluble in five per cent. solution of cocaine hydrochlorate, one hundred cubic centimetres at 24° C. only dissolving 0.135 gramme of the chloro-

mercurate. Experiments were then made to test whether this compound confers any antiseptic properties upon solutions of cocaine hydrochlorate in which it occurs, the conclusion drawn being that in the proportion chloromercurate of cocaine is present in Sattler's solution (0.0425 per cent.) its influence as an antiseptic is negative.—*Pharmaceutical Journal and Transactions*, October 29, 1887.

LAMINUM ALBUM.

Laminum album is a labiate indigenous to Central Europe.

The blossoms appear in commerce under the name of *Flores lamii albæ seu urticæ mortuæ* (the German *Taubennessel*, *Todtennessel*, or *Bienensaug*). When fresh the blossoms have a sweet, pleasant smell, not unlike that of honey, and have a sweetish taste and are slimy. The infusion is largely used among the peasants and country people as a remedy for catarrh.

Recently FLORAIN (*Journ. de Méd. de Paris*, 3, vii., 1887) called attention to the fact that the blossoms of the *Laminum album* were a hæmostatic of the first order. The remedy is said to have been efficacious in cases of bronchial hemorrhage, blood coughing, and uterine hemorrhage where the usual remedies, such as ergotin, acidum tannicum, and the like had been used without success. In metrorrhagia the syrupy extract of the blossoms is used.

The use of the tincture in the following formula is advised :

℞ Tinct. flor. lamii alb., 100 (about ℥iv);
Syrup. sacchari, 50 (℥ii);
Aqua dest., 250 (℥ix).

A half-teaspoonful or a "coffeespoonful" of the mixture should be given every half-hour until the internal bleeding ceases, after which a tablespoonful should be given every four hours until all the symptoms have disappeared.

—*Pharmaceutische Zeitschrift für Russland*, September 22, 1887.

A CASE OF CIRRHOSIS HEPATIS HYPERTROPHICA CURED BY CALOMEL.

DR. SCHNEPP, of Vienna, in the *Wiener Med. Blatt.*, xiv., 1887, speaks of a case of cirrhosis hepatis hypertrophica cured by calomel. The patient was a woman aged 28, who had all the symptoms of cirrhosis hepatis well marked. The liver, upon percussion, was found to be greatly enlarged.

After a course of Karlsbad had been tried for five weeks in vain, and strong purges, followed by free operations, had afforded only slight relief, the author, prompted by the suggestion of Professor Nothnagel, ordered an absolute milk diet, and gave calomel in .05 ($\frac{1}{20}$ grain) doses three to five times daily. On the second day of this treatment the fæces had already assumed a yellow color and the urine had lost the most of its high coloring, and in a few weeks icterus and ascites had disappeared, the liver was much smaller, and menstruation had again set in. In three months the patient had taken one hundred doses of calomel, and complete recovery had resulted. Sensitiveness, enlargement of the liver, ascites, and "caput medusæ" no longer existed.—*Deutsche Medicinal-Zeitung*, September 22, 1887.

ANCHIETEA SALUTRIS.

Anchietea salutaris St. Hil., belongs to the family of Violaceæ, and is found largely in Brazil and Guiana. The root of this climbing vine, which is called sipo or suma by the natives of Brazil, contains a but slightly known alkaloid called anchietine, to which emetic and anticatarrhal properties are accredited.—*Pharm. Zeitsch. für Russland*, September 22, 1887.

VATAIREA GUAJANENSIS.

The seeds of the *Vatairea guajanensis*, powdered and mixed with fat, are used as a salve in herpes serpigio and other skin-diseases. The brown-colored hulls, which contain the flat seed, are round, and of a leathery texture, with a hollow rim or edge, and do not burst open.

According to the *Pharm. Journal* the wood of the *Vatairea guajanensis* has an intensely bitter taste. The inner rind or bark is similarly used as the leaves. The drug is still being carefully studied and experimented with.—*Le Progrès*, Geneva, October 5, 1887.

PARTHENIUM HYSTEROPHORUM.

A new antifebrile remedy in England (*Pharm. Post*, 1887, No. xx., p. 442) is *Parthenium hysterophorum*, a plant which is indigenous to the West Indies and Louisiana. The active principle which it contains is a bitter alkaloid, which, when given internally, causes an in-

creased secretion of the salivary glands, but has no effect on the secretion of urine.

According to DR. TOVAR, of Cuba, *Parthenium hysterophorum* is used there as a household remedy for malaria, and he recommends it himself as a good febrifuge. MR. EGASSE, *Arch. de Pharm.*, 1886, used parthenium as an antineuralgic and febrifuge in doses of 1 to 1.5 ($15\frac{1}{2}$ to 24 grains), and states that smaller doses do not seem to produce any effect whatever. The results of his experience with the drug are good.—*Pharm. Zeitschr. für Russland*, September, 1887.

EMBELIA RIBES, A NEW REMEDY FOR TAPEWORM.

DR. HARRIS, of Simla, calls attention in the *Lancet* to the value of the fruit of the *Embelia ribes* for tapeworm. He states that the drug has for the last five years been used extensively not only by the natives, but also by the Europeans, with great success.

The dose of the pulverized fruit is from 1 to 4 drachms, which should be given in the morning with milk.

The fruit has an aromatic taste, and is about the size of a pepper-seed. According to Dr. Dymock, they have recently been exported in large quantities to Germany, where they are said to be used as the chief ingredient of several patent tapeworm "specifics." The drug is said to heighten the color of the urine.—*Le Progrès*, October 5, 1887.

ARADIRACHATA INDICA.

Aradirachata indica is a large-leaved zara-dach, and an evergreen belonging to the family of Meliaceæ. It is indigenous to India and Syria, and is largely found growing wild in North America.

The bark is introduced into commerce under the name of *cortex margosa*, or cortex aradirachata ("The Pride of India"). It is official in the United States, and is used as an anthelmintic.

The active principle is a bitter body which has not yet been closely studied, and to which Cornish has given the name of "*margosin*."

According to *Il Farmacista Italiano et il Medico Practico*, the decoction of the bark (60 to 750) and the alcoholic tincture (1 to 5) are both highly recommendable.

The decoction should be given by the teaspoonful, in connection with a laxative, to rid the system of ascarides; the tincture should

be given in doses of 2 to 8 grammes (31 grains to 2 drachms), and is a good tonic.—*Pharm. Zeitschr. für Russland*, September 22, 1887.

SALOL AS AN ANTIRHEUMATIC.

Although for some time past the salol question has been almost exhaustively discussed in this and nearly all the leading medical and therapeutical journals, yet it still belongs to the newer remedies, and is still "on trial," and therefore any further light on its uses and value cannot fail but to interest the readers of the GAZETTE.

Recently BIELSCHOWSKI (*Therap. Monatshefte*, 1887, p. 47), of Breslau, has published an article on salol, which he calls by its euphonic German name, "Salicylsaeurephenylæther," in which he says that for some time he has been using salol for acute muscular rheumatism, and that his opinions regarding the value of the drug in this disease are principally based on the result of a long series of experiments carried out in the Allerheiligen Hospital in Breslau. He considers it a specific; that it is equal in value to salicylic acid, and that it is superior to it on account of the fact that its use is unaccompanied by any unpleasant symptoms. Exanthema, perspiration, or digestive troubles were never observed, and only in one case a slight ringing in the ears was noticed. Bielschowski treated twenty-seven cases in all with salol; nineteen of these (among which fourteen were very severe) were promptly and completely cured by its use. In two cases the drug seemed to exert but little influence, whereas the use of 30 (nearly 1 oz.) of natr. salicylic. *per rectum* resulted in complete recovery. All the other cases, although both salol and salicylic acid were used, turned to chronic muscular rheumatism. Eight cases of relapse were observed, but they were all subsequently cured by salol given in small doses.

The drug was always given in capsules; usually 5 (77 grs.) were given *pro die*, inside of five hours; in a few cases 8 (123½ grs.) were given in eight hours. Smaller doses (2 to 3 = 31 grs. to 46½ grs.) were only used in after-treatment.

The smallest quantity of the drug which was sufficient to cause complete disappearance of the disease was 13 (about 3½ drs.), and the largest quantity that was ever given was 44 (about 1½ oz.).

After the use of the drug the urine assumes

a brownish or dark-brown color (carbolurin), which, upon the addition of a few drops of liq. ferri sesqu., changes into a violet shade.

The experiences of Dr. S. ROSENBERG, of Berlin (*Therap. Monatshefte*, 1887, p. 51), are not quite so favorable as those of Dr. Bielschowski. He also observed the prompt effect of daily doses of 6 to 8 (92½ grs. to 123½ grs.) when given in hourly or two-hourly doses of 1 (15½ grs.). Dr. Rosenberg, however, states that "nearly all" the cases suffered a relapse. Frequently, also, complications set in, such as pericarditis, endocarditis, and pleuritis. In one case the remedy completely failed to have any beneficial action, although its use (in 8 doses (123½ grs.) *pro die*) was continued for two weeks. This same case was then treated with natr. salicyl. (5 to 150), and a complete cure resulted in an incredibly short time. Also in regard to the accompanying symptoms, the experiences of Dr. Rosenberg are far from favorable. He states that he found the use of salol to be accompanied by all the unpleasant symptoms observed during the use of salicylic acid,—ringing of the ears, profuse perspiration, nausea, and vomiting, although the three last-named symptoms did not occur nearly so frequently as with salicylic acid. The ringing of the ears was often observed, and in some cases was quite severe. The smallest daily doses which caused disagreeable accompanying symptoms were 4 (62 grs.).

Dr. Rosenberg considers that salol simply acts as "disguised salicylic acid."

A beneficial action of salol was observed in acute cystitis and pyelitis by Dr. L. FLEISCHENFELD, of Berlin (*Therap. Monatshefte*, 1887, p. 52), and also in prostatohypertrophy. In a few cases the use of the drug had to be discontinued on account of its causing increased pressure of urine. Otherwise Dr. Fleischfeld observed no unpleasant symptoms accompanying its use.

THE VALUE OF HYDRASTIS CANADENSIS IN UTERINE HEMORRHAGES.

The value of the fluid extract of hydrastis canadensis in common menorrhagia is still a contested point among many able practitioners.

Dr. J. M. FUCHS (in the *Wiener Medicinische Blätter*, No. 43, October 27, 1887) states that he has found it of great value in such cases, and also used it with success in a case of profuse menstruation which was undoubtedly caused

by a myoma of the uterus, which was as large as the head of a child. The case is one of special interest, as only very recently the use of *hydrastis canadensis* has been recommended in various affections of the uterus.

The patient was a woman, aged 35, who had been a mother four times, and always had an easy time, unaccompanied by any complications, and even since the birth of her last child (which was five years since) menstruation had always been normal and regular. For the last two years, however, menstruation had been irregular, and occurred every three weeks and lasted from ten to twelve days.

Fourteen months ago Dr. Fuchs saw the woman for the first time. She was greatly reduced, highly anæmic; was, however, wholly unconscious of the existence of the tumor, which was easily discovered, by palpation of the abdomen, to be situated on the front wall of the womb. With the exception of the continued hemorrhage, she said that she experienced no inconvenience from it whatever.

The vaginal portion of the uterus was normal. An examination with a sound was not permitted.

The author gave as a palliative ext. fluid. *hydrastis cand.* in doses of 20 drops four times daily. The first menstruation after its use was six days later than usual, and in three months the menstruation had become perfectly normal.

Dr. Fuchs now discontinued the continual use of the drug, and only gave it ten days before the usual period, and continued it until the menstruation had ceased. Up to the present time, which is over a year, the menstruation has continued to be regular.

Whether the tumor has decreased in size or not the author cannot say, as any thorough or intra-uterine examination is not allowed. At any rate, the symptomatic result is most favorable.

It should further be remarked that the drug was not only well endured by the stomach, but that it also had a beneficial effect on the digestion.

A NEW ANÆSTHETIC.

DR. NJUSCHKON, in the *Casop. Cesk. Lékár.*, advocates the use of *kandol* in the place of ether or cocaine.

Kandol is a product formed by the distillation of naphtha, and is a perfectly clear, colorless fluid, extremely volatile, burns easily,

and smells slightly of benzene. It can be mixed with a small quantity of water or alcohol. The preparation of the drug is simple, and it is very cheap. Its actions can be fully relied upon. It is used in the form of a spray as a local anæsthetic, and in one minute will reduce the temperature to -10°C. , and the drug will keep it pretty uniformly at that temperature for some time, while ether reduces the temperature to -17°C.

The skin becomes very hard, and is completely anæsthetized, and there is either no bleeding at all, or else the blood coagulates as soon as it makes its appearance, so that all operations may be performed with great ease and rapidity.—*Le Progrès*, October 5, 1887.

THE VALUE OF SALOL IN THE TREATMENT OF ACUTE MUSCULAR RHEUMATISM, ETC.

A series of most interesting experiments has been recently carried out in the "Leyden" clinics regarding the use of salol in acute muscular rheumatism, lumbago, omalgia, etc. The drug was given in the form of powder, and in daily doses of 6 to 8 grammes ($1\frac{1}{2}$ to 2 drachms). The effect of the drug was truly wonderful, and could not be alone ascribed to the presence of salicylic acid in salol. In no case did the drug produce any disagreeable accompanying symptoms whatever.

Salol was also given in typhus, pneumonia, pyæmia, ulcerous endocarditis, and diphtheria, and proved itself to be a reliable antipyretic, although only of a medium and not of an excessive intensity.

Apirexia was produced without any unpleasant symptoms, and the accompanying perspiration was moderate. Collapse was not observed in a single case. The diarrhoea was not in the least affected by the drug. The only disagreeable accompanying symptoms that were observed were occasional ringing of the ears and a few cases (especially in typhus) of gastric irritation, nausea, vomiting, etc. In one case only was the use of the drug followed by chills.

In one patient symptoms of carbolic-intoxication were observed in three days, twenty-four grammes (about six drachms) of salol having been administered.

In a case of myelitis, accompanied by paralysis of the bladder, the drug gave very good results, although the urine was in the act of decomposing.—PEIPER, in the *Centralblatt für Klinische Medicin*.

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